ABSTRACTS

APRIL 2020

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A38

Presentation Type: Applied Experience Display

Presenter(s): Luke Grundmeyer

Faculty Mentor(s): Rachel Friedensen

Husky Compact Dimension: Communicate Effectively

Title: Senate Finance Committee Processes and Efficiencies

Abstract:
My practicum for the Higher Education Administration Master's Degree program was with Student Life and Development. Through the assignment from my practicum advisor, Director for Student Conduct and Programs Margaret Sarnicki, I advised the Senate Finance Committee for a semester. Their mission is, "… to allocate funds to student organizations on a yearly basis, and per their request. The committee meets weekly, hosts finance trainings for organization treasurers, and oversees student organization spending". I advised the leadership of the committee and assisted in their professional development. I also attended Senate Finance Committee meetings and advised the committee regarding funding request questions and issues. The Reserve Funding Request process hadn't been reviewed and revised for several years and only paper copies were available, to be completed and returned to the Student Government Office once completed. The original funding request(s) were passed to each committee member for their review, fifteen minutes prior to start of the meeting. The committee then inquired relevant questions to the student organization making the request. My applied project was to create efficiencies through the internal operations of the Senate Finance Committee and create a more user-friendly process of requesting funds for the student organization's event, equipment, and conferences. I am presenting the before-and-after forms to request funds, the standardization of the forms online, and efficiencies of having the forms online for both internal and external use.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A41

Presentation Type: Applied Experience Display

Presenter(s): Sean VanEvery

Faculty Mentor(s): Steven McCullar, Seth Kaempfer

Husky Compact Dimension: Think Creatively and Critically

Title: Exploring Campus Pride Housing with the Best Practices Model of Living-Learning Communities at St. Cloud State University

Abstract:
This practicum experience, explores the Best Practices Model (BPM) and most recent research of Living-Learning Communities (LLC's). By assessing the current student population housed through St. Cloud State University's Pride Community, it is the goal of this experience to help strengthen the foundation of the program and develop future opportunities for students. This assessment explores the social and academic support students experience during their time in the program. For those unfamiliar with this program, it is a collaboration between the LGBT Resource Center and the Department of Residence Life. The program is one of several communities at the institution and is housed in Sherburne Hall. It is important to note, that the Pride Housing at St. Cloud State University is considered a Living Community. Some areas of the BPM will not be explored due to this, as the program is not connected with an academic department or offers courses for credit. In addition to assessing students of the Pride Housing program, this practicum worked on developing events for the program based on the standard of practices for the BPM. With this project, it is the hope to showcase the various objectives and possibilities that university housing programs can offer for LGBT+ students.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A49

Presentation Type: Applied Experience Display

Presenter(s): Sangyoon Park

Faculty Mentor(s): Yun Claire Park

Husky Compact Dimension: Seek and Apply Knowledge

Title: Leadership improvement skills of student employees in a diverse higher education.

Abstract:
St. Cloud State University follows “Our Husky Compact” which seeks and applies knowledge. Every academic year has a different slogan advocated for global citizenship. The presentation will show you how we train student workers to elaborate on their leadership skills along with the “Our Husky Compact”. If you are planning to efficiently train your student workers, the training method is what you should be concerned with and prepared for. So how exactly can you construct online training, sustaining and compelling messages for students? This presentation highlights the online training, provides a real-time performance intervention for the higher education of any interactive web-based training.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A50

Presentation Type: Applied Experience Display

Presenter(s): Sydney Fournier-Dingmann

Faculty Mentor(s): Erica Karger-Gatzow

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Peer Wellness Coaching Internship-Social Work

Abstract:
As a Master of Social Work Foundation student, I am participating in an internship at St. Cloud State University as a Peer Wellness Coach. Peer Wellness Coaching is a free service that is available for all St. Cloud State students. It provides one-on-one, peer to peer support for wellness goals through the use of motivational interviewing. All of the coaches are graduate level students with training in motivational interviewing. Motivational Interviewing is an evidence-based practice that focuses on how to help a client make effective changes that last. There are six areas of wellness that a student can choose to work on, and the coach's responsibility is to guide them towards meaningful goals and changes that work for the student. The overall goal of Peer Wellness Coaching is to be supportive of St. Cloud State students and increase a student's sense of belonging on campus. Increasing belongingness is an important part of student retention rates at St. Cloud State, and by maintaining students, Peer Wellness Coaching assists in providing a happy, healthy, engaging campus community. Through my internship, I have learned valuable micro skills of working with clients as well as macro skills of program development. The variety of Social Work skills that I am developing are going to be instrumental as I continue my education and future career. During my time in Peer Wellness Coaching, I have found satisfaction in making a difference for students and being a part of mental health advocacy on campus through the focus of wellness.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A137

Presentation Type: Applied Experience Display

Presenter(s): Jonathan Oleson, Bader Abdulrahim, Chad Klepsa, Jonathan Knafla

Faculty Mentor(s): Eric Little

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Lens Locating and Flipping Mechanism

Abstract:
This project is a senior design project, a two-semester project representing the culmination of our coursework as mechanical engineers. The project goal was to design and build a mechanism that can pick up a lens blank and situate it in a prescribed location, flip the lens with very high repeatability (precision), and remove the finished lens to place it in the output location. Between steps, one side of the desired lens will be generated, or cut out of the surface, so the end result would be a roughly-shaped lens which must still be polished. The progression of the project design began with research on existing robots, then moved onto research of other existing solutions, continuing onto research of individual components which could be assembled into a viable solution, and ending with the design and construction of a working solution using many of the researched components. This project required the use of skills acquired through our coursework such as analyzing parts using calculations and software, writing programs to carry out tasks, modeling three-dimensional objects and assemblies using computer-aided design (CAD) software, and applying knowledge from various fields in mechanical engineering such as materials science and machine design. This project has assisted us in learning and improving valuable skills related to problem solving, acquiring and utilizing knowledge, project planning, and effectively communicating information.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A144

Presentation Type: Applied Experience Display

Presenter(s): Jack Bunnell, Andrew Carlson, Casey Sanders, Max Jaafari

Faculty Mentor(s): Nancy Sundheim

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Coldspring Granite "Marker Department" Line Improvements

Abstract:
Coldspring granites' “marker department” heavily relies on one person with the organization of the workflow and line balancing by making sure every person in the department has work to do. This is done by organizing what pieces come down the line at a specific time. At one station, pieces are brought on the line and taken off by that person after the pieces are cut. We determined that a system that can organize the incoming orders would allow pieces to be cut in a specific order which would allow less mental strain on the organizer and less work of pieces coming off and on the line. This system would take orders two hours before the brass plaques arrive. Work orders would be inputted with predetermined estimates of the time of work needed for that piece at each station. Then the system would organize that in the order which would be best to keep workers on task. Challenges for this system is that not all pieces are cut on the line and not all pieces need to be drilled or have plaques installed. This means that in between cutting pieces will always have to be added and removed to the line creating more variables with our system.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A157

Presentation Type: Applied Experience Display

Presenter(s): Kallie Kammer

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Seek and Apply Knowledge

Title: Internship experience with Healthy Huskies

Abstract:
I am a Community Health major and Healthy Huskies intern in my final semester at St. Cloud State. Healthy Huskies is a diverse group of student educators who provide inclusive peer-to-peer support that promotes student success and engagement by focusing on health and well-being. The topic areas Healthy Huskies are focusing on this year are: sleep, sexual health, alcohol & other drugs, e-cigarettes/vaping & tobacco, and mental health/stress & the "Hey, You Okay?" initiative. We do a lot of outreach with each topic through a variety of ways, including tabling, fun events, waiting room posters, bulletin boards and social media. During the Huskies Showcase, I plan to cover each health topic, provide some examples of how we have spread awareness about them throughout campus, and explain why they are significant aspects for a healthy community. Since mental health/stress has been my focus during my internship, I will go more depth about my specific projects. I have centered my campaign around the resources we have here on campus that students can benefit from if they are feeling overwhelmed with responsibilities or have any mental health concerns, as well as the "Hey, You Okay?" campaign, which is a four-step initiative for students, staff and faculty to check in with one another if they feel they may be struggling.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A158

Presentation Type: Applied Experience Display

Presenter(s): Hallie Theodosopoulos

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Seek and Apply Knowledge

Title: Minser Chiropractic Internship

Abstract:
As a member of Dr. Giovanni Antunez's Community Health Internship (HLTH446) class, I will be providing a presentation about exercise department at Minser Chiropractic. I will be highlighted the benefits of working with a certified Exercise Physiologist along with ways that exercise can be promoted better to patients who are seeking care for better overall health and wellness.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A159

Presentation Type: Applied Experience Display

Presenter(s): Halle Johnson

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Think Creatively and Critically

Title: County Public Health Internship

Abstract:
My experience working with Meeker County Public Health was and what I learned from it.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A160

Presentation Type: Applied Experience Display

Presenter(s): Erica Kaonga

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Cultural Competence

Abstract:
Culture is the way of life of a population or a group of people that may influence their behaviour. The USA has a lot of cultural diversity, which presents learning opportunities for all people to learn about other cultures, but also presents a barrier in that healthcare providers are struggling to effectively engage the wide range of people present in the country. Cultural practices are at times tied to religious beliefs, health beliefs, and even traditions. Cultural competence is the ability to understand and communicate effectively with people from diverse cultures. For my project, I will aim to analyse the different components of cultural competence. I will be taking the perspective of metal healthcare. The components include: knowledge and awareness of other cultures, Cross-cultural communication skills, self-awareness and management of personal bias. I will use my internship experience at Mental Health Minnesota, to see how they could become more culturally competent as a non-profit. I will be using the applied experience display as the method for my presentation.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A162

Presentation Type: Applied Experience Display

Presenter(s): Andrea Frank

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Community Health Internship at ISD 15

Abstract:
This presentation will summarize my internship with the Saint Francis School District-- ISD 15. The internship is a 300-hour requirement for a degree in community health. Throughout this internship, I have been promoting health in multiple sectors of ISD 15 including the high school, middle school, and alternative schools. At the high school, I am working with the guidance counselors to promote mental health awareness. I am also working with nutrition services to promote the school breakfast program at the middle school and surveying students about food preferences to improve head counts. Finally, I am serving as a guest speaker at an alternative school for boys providing lessons on different health-related topics including stress, nutrition, exercise, alcohol, drugs, tobacco, e-cigarettes, and etc. I am spending approximately 100 hours at each facility practicing assessment, implementation, and evaluation of strategies to promote health and educate students. This presentation will illustrate the projects I develop and potentially progress I make while serving this community

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A163

Presentation Type: Applied Experience Display

Presenter(s): Sofya Semanduev

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Arise Cares

Abstract:
Arise Cares provides home care services for people of all ages. Between managing daily tasks, bathing, cooking, homework, running errands, arise cares is there for you. They provide a variety of services with great PCAs and work with different types of insurance.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A176

Presentation Type: Applied Experience Display

Presenter(s): Anna Jagodzinski, Alex Rymer

Faculty Mentor(s): Belkis Kambach

Husky Compact Dimension: Seek and Apply Knowledge

Title: Eco-Tourism

Abstract:
We will be demonstrating what Eco-Tourism is, why it is important, and how you can get involved!

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A180

Presentation Type: Applied Experience Display

Presenter(s): Baylee Holeman, Levi Nelson

Faculty Mentor(s): Sami Bosacki

Husky Compact Dimension: Communicate Effectively

Title: Greek Life

Abstract:
This project will show what Greek Life is here at St. Cloud State University. Including what chapters we have on campus, what are values are and how we live into those values. It will also touch on how our students impact the community and campus showing the different ways they get involved. The chapters here on campus partner with several national organizations to help raise awareness and raise money for the causes. They complete several service projects year-round as individuals and as a whole. Greek life offers many benefits to not only the people in the organization but to a wide network some may not even know they are impacted by what Greek life dose. They are indirectly impacted by the actions and philanthropic work that is put in by students each and every day. It will also show the direct impact it has on its members such as friendships, memories, community and campus involvement, philanthropic work, support system, and real life skills. In Greek like many people any it's not for four years it's for life and that could not be truer. Greek life prepares its members to be ready for the "real" world by providing them with connections, support, networks and skills many other college students are still trying to figure out.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: A181

Presentation Type: Applied Experience Display

Presenter(s): Anne Henderson

Faculty Mentor(s): Erica Karger-Gatzow

Husky Compact Dimension: Communicate Effectively

Title: The Hey, You Okay? Initiative

Abstract:
The Hey, You Okay? initiative is run by the Center for Health and Wellness Innovation. Hey, You Okay? is a four step program that we try to teach to as many people as we can, as a way to help people start conversations, check in on peers, colleagues, friends and family and help foster better, closer connections and reduce risks of self-harm or suicide. 39 percent of students have been diagnosed with a mental health condition within their lifetime, and 37 percent of students say they are unable to manage their stress; creating community connections, such as friends, family and peers, is a documented protection factor against suicide. The Hey, You Okay? initiative is part of St. Cloud State University's JED Campus commitment, which is an initiative designed to empower schools with a framework and customized support to enhance student well-being, substance abuse prevention efforts, and works to create a positive, lasting change on a systemic level in the campus community. The current form of the initiative is based on a previously-used Australian program called "R U OK?". The Hey, You Okay? initiative we use now was fine-tuned by a student-led collaboration with faculty and began implementation in the 2019 Spring semester. The Hey, You Okay? presentation is a free 15-minute presentation given by a trained presenter that covers the four steps of Hey, You Okay?, the resources available in the community and provides practice conversations. People who are interested in becoming a trained presenter and teaching others about the initiative can sign up for a free training session.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: AP1

Presentation Type: Artistic Performance

Presenter(s): Helen Vo, McKenna Klaphake, Brandon Betancourt, Jenna Hemann, Sam Musso, Sam Ostransky, Briannia Pearson, Hannah Thompson

Faculty Mentor(s): Jen Tuder

Husky Compact Dimension: Think Creatively and Critically

Title: Amplify: Expanding Mental Health Dialogue on Campus

Abstract:
Amplify: Expanding Mental Health Dialogue on Campus encompasses common narratives about mental health among college students. In an attempt to challenge common stereotypes, the performers have devised a script that speaks to mental health issues in our campus community. In our presentation, you will see highs, lows, true stories, and dramatized accounts. Amplify invites open conversation about our mental health.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: AP2

Presentation Type: Artistic Performance

Presenter(s): Casey Fuller

Faculty Mentor(s): Sharon Cogdill

Husky Compact Dimension: Think Creatively and Critically

Title: The Work

Abstract:
A reading from a poetry manuscript entitled The Work, a project completed in the fulfillment of an English Studies M.A. degree. Themes in The Work include being poor, working crappy jobs, formerly classified U.S. documents, getting accidentally shot by a friend, and a cycle of never-ending poems about the precipitous decline of America -- in short, a book about what it's like to be alive and write poetry as a citizen of the United States in the 21st century.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D1

Presentation Type: Demonstration

Presenter(s): Melvin Schmid

Faculty Mentor(s): Mark Petzold, Benjamin Witts

Husky Compact Dimension: Seek and Apply Knowledge

Title: Advancing Research on Cry-Induced Infant Head Trauma with an Automated Baby Datalogger

Abstract:
An estimated 3-10% of infants each year suffer from colic, a temporary condition in which inconsolable pain-like cries occur nightly for 1-3 months. These infants are more susceptible to infant head trauma as a result of the sleep-deprived, overstressed care providers who are met with endless frustration from this condition. One hypothesis for colic's development is a positive feedback loop in which more and more aggressive shaking of the colicky infant is supported by brief moments of relief from crying. To further our understanding of colic and caretaker behavior, an interprofessional collaboration between behavior analysis and computer engineering ensued in which we created customizable software and hardware. The heart of the doll is comprised of several sensors and modules that automate crying, facilitates interactions with a research participant, and logs the movement data via Fast Fourier Transformation (FFT) in Hz (i.e., shakes per second). This automated baby datalogger exports data via two SD card modules, and all events are time stamped via a real-time clock. Two separate microcontrollers work in tandem to handle data processing and automation. Recordings of real infant cries are delivered through a speaker controlled through an audio module and an amplifier. This research proved to be an effective way to seek knowledge beyond the standard classroom curriculum and apply it in a cross-discipline setting. As a student, it provided an opportunity to independently make informed decisions while pursuing expertise in computer engineering.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D2

Presentation Type: Demonstration

Presenter(s): Monali Sinare, Nicol Anokhin

Faculty Mentor(s): Shensheng Tang

Husky Compact Dimension: Seek and Apply Knowledge

Title: PIC Microcontroller Based Temperature Monitoring System

Abstract:
This project demonstrates a building block for sensor data monitoring system. It is aimed towards designing a system that can read, process and display sensor data. The system is divided into three modules, a Sensor module, a Master control module and a computer-based graphical user interface (GUI). The GUI provides few control operations, such as Start and Stop sensor data acquisition. It also includes a graphical display of temperature data in degree Celsius and degree Fahrenheit. The GUI communicates with a Master control module over Bluetooth, to send the control commands and receive the sensor data. A Master control module, which is implemented by a PIC microcontroller, takes control commands from GUI and additionally, includes a local keypad to control the flow of the overall system. It also includes a local LCD to display temperature data received from the sensor module. The Master control module communicates with the Sensor module over the SPI interface. SPI is a serial communication protocol that allows multiple sub-modules to be connected to a Master control system over a single SPI bus. The Sensor module constitutes a temperature sensor and another PIC microcontroller. The PIC microcontroller in the Sensor module is controlled by a Master control module. Depending upon the instructions received from the Master module, it reads temperature data from the sensor, displays it on a local LCD and transfers the temperature data to the Master control module. Completing this project requires the application of knowledge acquired in class about hardware circuit construction, PIC microcontroller programming using C language, GUI programming using Microsoft Visual Studio and system integration.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D3

Presentation Type: Demonstration

Presenter(s): Lea Bergquist

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D4

Presentation Type: Demonstration

Presenter(s): Marguerite Crumley

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D5

Presentation Type: Demonstration

Presenter(s): Jaci Eatherton

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D6

Presentation Type: Demonstration

Presenter(s): Megan Haas

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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Abstract Code: D7

Presentation Type: Demonstration

Presenter(s): Timothy Johnson

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D8

Presentation Type: Demonstration

Presenter(s): Caitlyn Jordan

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D9

Presentation Type: Demonstration

Presenter(s): Savannah Kolles

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D10

Presentation Type: Demonstration

Presenter(s): Sofi Kristensen

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D11

Presentation Type: Demonstration

Presenter(s): Bigyan Lama Thing

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D12

Presentation Type: Demonstration

Presenter(s): Whoshey Lo

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D13

Presentation Type: Demonstration

Presenter(s): Rilee Marquette

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D14

Presentation Type: Demonstration

Presenter(s): William Meyerhoff

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D15

Presentation Type: Demonstration

Presenter(s): Suman Modha

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
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2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: D16

Presentation Type: Demonstration

Presenter(s): Saw Moo

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D17

Presentation Type: Demonstration

Presenter(s): Gloria Nwanekpe

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D18

Presentation Type: Demonstration

Presenter(s): Pearl Papenfuss

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D19

Presentation Type: Demonstration

Presenter(s): Cole Pecka

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D20

Presentation Type: Demonstration

Presenter(s): Sumaiya Raka

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D21

Presentation Type: Demonstration

Presenter(s): MaKalla Schmitz

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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Graphic Design Senior Open House is a demonstration of portfolio of original works created by graphic design seniors enrolled in ART 422 Professional Practices course. Students will present printed and digital work created during their coursework at SCSU, independently or for internships. Design professionals, St. Cloud and SCSU community are invited to attend. The purpose of the Open House is to allow senior graphic design students to display their work, practice presentation skills, network and practice the skills necessary to promote their work as professional creatives. All students will have printed portfolios, business cards and resumes available to view. Some will present additional projects using tablets, computers or printed displays. Total of 22 students. Instructor: Katya Reka katya.reka@stcloudstate.eduBergquist, Lea SCrumley, Marguerite REatherton, Jaci DHaas, Megan MJohnson, Timothy IJordan, Caitlyn EKolles, Savannah RKristensen, Sofi MLama Thing, BigyanLo, WhosheyMarquette, Rilee MMeyerhoff, William JModha, Suman RMoo, Saw PNwanekpe, Gloria APapenfuss, Pearl HPecka, Cole JRaka, Sumaiya ASchmitz, MaKalla MSchroepfer, Amy CScribner, Scott VToftey, Benjamin K

Abstract Code: D22

Presentation Type: Demonstration

Presenter(s): Amy Schroepfer

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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Abstract Code: D23

Presentation Type: Demonstration

Presenter(s): Scott Scribner

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

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Abstract Code: D24

Presentation Type: Demonstration

Presenter(s): Benjamin Toftey

Faculty Mentor(s): Katya Reka

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graphic Design Senior Portfolio Open House

Abstract:
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Abstract Code: D25

Presentation Type: Demonstration

Presenter(s): Manish Ale Magar, Shubham KC

Faculty Mentor(s): Shensheng Tang

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Implementation of a real-time digital signal processing system using PIC micro controller and GUI

Abstract:
In this project, we have designed and developed a real-time digital signal processing (DSP) system using PIC24 microcontroller and C# GUI (Graphical User Interface). The system can digitize an input analog signal and process the digitized data using FFT technique which is implemented in the PIC microcontroller. The system uses rectangular wave with a duty cycle of 50% as an input signal. The maximum input range for the input signal is 10 times less than the maximum sampling frequency that can be achieved with a developed real-time digital filter. The sampling frequency can be entered from a textbox in the C# GUI and a timer is used to control the sampling frequency. The input signal has a voltage range of 50 mV to 4V as the floating point is used to represent the filter coefficients. The GUI can select a Low Pass Filter (LPF) or Bandpass Pass Filter (BPF). The filter coefficient file is selected for different type of filters through the GUI and the file is downloaded to the microcontroller using Bluetooth module. The input signal is digitized with Analog to Digital Converter (ADC). The digitized input signal is processed with the filter coefficient using the difference equation in the microcontroller. The input data and the output from the difference equation is stored in a buffer which can store 350 samples of data at a time. After the buffer for the input signal and the output data is full, the microcontroller sends the data over to the GUI and the GUI plots both the input and output data using the ZedGraph technique. After the GUI finishes the plotting of both data, it sends a command to the microcontroller for the next set of data and the process repeats. Different commands have been developed for the GUI to control the digital signal processing.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: G1

Presentation Type: Gallery Exhibit

Presenter(s): Scott Scribner

Faculty Mentor(s): Peter Happel Christian

Husky Compact Dimension: Think Creatively and Critically

Title: Through Psychogenic Viscera

Abstract:
My aim for Psychogenic Viscera is to transform a series of ordinary photographs into otherworldly, internal mindscapes. I want to lead the viewer through a small cascade of psychological and visceral scenes. I want to urge them to leave their world behind and become lost through repetitive focal points, mystifying symmetry, and enigmatic contrast. Here they can grapple with ideas of mortality, consciousness, and what lies beyond it. I want these images to pull the viewer out of their daily motion and make them struggle with these questions for a moment. It is hoped that this image can create a slight impulse within them to think through their physical being. As bleak as it may seem, existential acknowledgment could bring many to terms with the importance of life and its finite value. I plan on creating these images by enlarging 35mm negatives beyond the edges of picture plane. Doing this multiple times with the same negatives, I can create symmetrical patterns and shapes through larger collages of prints. To establish a psychological sense within these prints, I will expose the prints for longer periods of time to create stark contrast. The negatives being used consist of macro shots of visceral material such as roadkill. To steer away from shock value, mostly bone will be present in the enlarged prints while being abstracted in a visually interesting way. Lastly, the images will be mounted on black poster board and framed accordingly.

Abstract Code: G2

Presentation Type: Gallery Exhibit

Presenter(s): Ben Toftey, Bigyan Lama Thing

Faculty Mentor(s): Bill Gorcica

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Celebrating the Seasons through Art

Abstract:
This project is a multimedia art piece that mixes physical objects and digital displays. The main theme for it is seasons and celebrations throughout the year. The new technology that is going to be used here is a depth mapping projector that can focus on different 3D objects simultaneously. This project will be a collaboration between two student artists, one who works with physical 3D objects, the other with animation and digital art. This opportunity will allow us to display a piece outside of the classroom and in a public space. We are also interested in having people view this project from different perspectives, inspecting small details and viewing the project from afar. There is a good possibility that we will also being using the 3D printer and CNC mill located in the art department during this project, which are provided by an innovation grant from MN State. This project would be important because it will extend a developing body of work that mixes physical objects and new technologies. It will serve as a good example to inspire and educate current and new students. This idea will also do a great job of representing the arts at the showcase and displaying the strong connection between art and advancing technologies.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O1

Presentation Type: Oral Presentation

Presenter(s): Makenzie Anderson

Faculty Mentor(s): Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: Creation of a Universal Inoculum through the Analysis of Anaerobic Digester Samples

Abstract:
Anaerobic digestion is a sustainable waste management technique used to break down organic wastes through a series of sequential microbial conversions. It has many benefits, including the production of methane gas, which can be harnessed and used as a form of renewable energy. Maintaining a suitable environment within an anaerobic digester can be difficult due to the fragility of its internal microbial community and our lack of knowledge about its composition. Through the cultivation of methanogens from anaerobic digester samples, isolation of individual strains, and measurement of each strain's methane gas production, this study aims to identify which strains of methanogens are responsible for the most methane production to contribute to the creation of a universal inoculum that can assist in strengthening or restarting a digester's microbial community. Samples were collected from the infeed, digestate, and outfeed of an anaerobic digester located on a farm in St. Cloud, Minnesota. The samples were serially diluted and plated under anaerobic conditions. Individual colonies were isolated, transferred into Hungate tubes, and placed under anaerobic conditions. To test for methane production, headspace from each individual strain was collected and analyzed with an Amprobe GSD600. Methane concentration measurements were repeated in a triplicate, and a mean value was calculated for each strain. From the initial plating, we isolated 37 isolates. Methane concentration was detected for 18 of the isolates, with 7 producing more than 640 ppm and 11 more than 40 ppm. Nineteen strains did not produce any methane. Our work supports the hypothesis that there is a complex community of methane producers in the environment of anaerobic digester. Our results indicate that the composition of the initial inoculum of an anaerobic digester can have a large impact on its methane production

Abstract Code: O2

Presentation Type: Oral Presentation

Presenter(s): Alexander Seymour

Faculty Mentor(s): Jennifer Lamb

Husky Compact Dimension: Seek and Apply Knowledge

Title: Biofluorescence in Larval and recently Metamorphosed Ambystoma Salamanders

Abstract:
Biofluorescence, when light that is absorbed by compounds in an organism's tissues is emitted into the environment at longer wavelengths, has been documented in several clades of marine fishes, but we know much less about this phenomenon in tetrapods. Biofluorescence has previously been documented in seven families of frogs and nine families of salamanders. Adults of both the Eastern Tiger (Ambystoma tigrinum; Family Ambystomatidae) and Blue-spotted Salamanders (Ambystoma laterale) fluoresce. However, we do not know whether biofluorescence occurs throughout ontogeny. Here, we present preliminary findings from the first survey for biofluoresce across the development of mole salamanders. We used visual surveys, minnow traps, and dip-netting to sample for salamander eggs and larvae from two localities in central Minnesota during the spring and summer of 2019. We photographed individuals under white light to document their pattern and stage of development, and we tested for biofluorescence by photographing individuals through a longpass filter while illuminating them with a blue excitation light (440 - 460 nm; NIGHTSEA). The egg jelly, developing embryos, and larvae of A. tigrinum and A. laterale fluoresce, but what fluoresces (i.e., eyes, peritoneum, and yellow pigments), and the primary wavelengths emitted, differ between species. If salamanders, or other pond inhabitants are able to see this fluorescent light, then biofluorescence in freshwater habitats may play a role in intra- or interspecific identification or function as a means of camouflage.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O3

Presentation Type: Oral Presentation

Presenter(s): Casper Groenenboom

Faculty Mentor(s): Isolde Mueller

Husky Compact Dimension: Seek and Apply Knowledge

Title: Alles Gute zum 150. Geburtstag. SCSU in St. Cloud's German newspaper Der Nordstern with sources from 1876-1917

Abstract:
Come to our presentation and view SCSU through the lens of St. Cloud's German speaking community from the year 1876 until 1917. Our project is sure to broaden the experience of St. Cloud State University's 150th anniversary. We dug through St. Cloud's most read German newspaper in its day, known as Der Nordstern, and translated a wide variety of articles relating to SCSU's early years. Through careful searching, reading and translation, we were able to follow St. Cloud State University's early developments as well as capture the lives of the people who lived it. The translation process required great attention to detail to fully grasp the true essence and meaning of these century old news stories. In order to do so, the group was not only tasked with crossing the language barrier between English and German, but also the language and cultural barrier between the 21st and 19th Century. This required us to read Gothic script, adapt to grammatical differences, and reinterpret the meaning of common vocabulary. From celebrating the arrival of new students, faculty, and presidents, to the mourning of their departure and passing, the project reawakenes the early stories of St. Cloud State University which had been dormant for over a century, making it available for the campus community of today.

Abstract Code: O4

Presentation Type: Oral Presentation

Presenter(s): Amira Zaher Logan Olson Jace Engelmann

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Study of the Anti-Diabetic Properties of Sodium Bicarbonate in a Mouse Model of Type 1 Diabetes

Abstract:
Type 1 diabetes (T1D) is a chronic inflammatory autoimmune disease in which T cells destroy insulin-producing β-cells in the pancreas, leading to hyperglycemia. Some T cells directly kill β-cells, such as T-cytotoxic (Tc), or indirectly such as T-helper (Th), while others, like regulatory T cells, actually protect them. A recent study showed that sodium bicarbonate (SB) exhibited anti-inflammatory activity by affecting immune cells other than T cells, speculating its potential for the treatment of autoimmune diseases. Since SB has never been tested in an experimental mouse model for autoimmunity, we studied the effects of SB treatment on the development and severity of T1D, as well as on T cell subsets and T cell function. It was hypothesized that SB administration (200 mM, administered via drinking water) would decrease the incidence and severity of streptozotocin-induced T1D in 8-week-old C57BL/6 mice by its action on T cells. Glucose and body weight measurements were taken biweekly until mice were sacrificed four weeks later, and their spleens obtained for analysis of cell counts, viability, T cell proliferation, and quantification of T cell subsets by flow cytometry. There were no differences in splenic lymphocyte counts and viability between SB-treated and control mice. Although results showed that SB significantly decreased glucose levels and delayed diabetes development, it does not seem to affect the frequency of T cell populations nor their proliferation capacity. Our results suggest beneficial effects of SB in the prevention of mouse autoimmune T1D and highlight the need for further studies on its mechanism of action.

Abstract Code: O5

Presentation Type: Oral Presentation

Presenter(s): Shantelle Des Marais Lakshima Hiripitiya

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Sodium Bicarbonate as a Preventative Treatment for Type 1 Diabetes in NOD Mice.

Abstract:
Type 1 Diabetes (T1D) is an autoimmune disease in which insulin-producing β-cells of the pancreas are destroyed by immune T cells. Lack of T cell tolerance generates chronic pancreatic inflammation leading to elevated blood glucose levels (hyperglycemia). The resulting insulin deficiency is currently treated using insulin injections, which are very expensive and do not prevent the development of T1D. The extreme personal and economic costs involved in the treatment of T1D contributes to T1D's status as a global public health issue. Recent studies have shown that sodium bicarbonate (NaHCO3) exhibits anti-inflammatory effects. Thus, NaHCO3 properties may prove useful in delaying the onset of T1D. It is hypothesized that NaHCO3 administration will decrease the incidence and severity of T1D in the NOD-LTJ mouse model by its action on T cells. In order to test the hypothesis, female NOD-LTJ mice, who spontaneously develop diabetes, will be separated into 3 different treatment groups, each containing at least 10 mice per group. At seven to nine week of age mice will start receiving either 20 mM or 200 mM NaHCO3 via drinking water, while control mice will obtain just a regular drinking water. Glucose and body weight measurements will be taken biweekly from 12 weeks of age onwards, until the mice become diabetic or until the experiment ends, which will be at 24 weeks of age. Mice will be considered diabetic after two consecutive glucose readings of >250mg/dl. Statistical analysis will be performed at the end of the experiment. Results from this experiment may provide further insight into the potential benefits of NaHCO3 as a preventative treatment for T1D.

Abstract Code: O6

Presentation Type: Oral Presentation

Presenter(s): Ellen Boisen

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Toward a Geographic Remodeling of Localized Urban Food Deserts: The Case of St. Cloud

Abstract:
After the 2008 passing of the Food, Conservation and Energy Act (FECA), the United States Department of Agriculture developed a Food Desert Locator, which takes into account population density, income, and distance from a grocery store. The Locator is an index of census tracts nationwide at risk of food desertification. Currently, Five census tracts have been identified in the St. Cloud area as food deserts. Using geographic information systems to further identify and define how some populations may be affected by spatial inaccessibility, this research seeks to develop a time-space model that observes scales smaller than census tracts and analyze specifically where food deserts exist in St. Cloud. In particular, I aim to demonstrate how public transportation can affect accessibility to food thus potentially impacting the mapping of food deserts in urban areas and better informing public policy.

Abstract Code: O7

Presentation Type: Oral Presentation

Presenter(s): Jessica Craig

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Towards a Less Divided Politics: solving the problem of electoral map bias through geography

Abstract:
150 years ago, Abraham Lincoln stated that, “elections belong to the people.” What a timely reminder for us, the people, as the nation heads into a census year among political division and turmoil. How can we make US politics less divisive? It begins with process. Partisan gerrymandering, or electoral map bias, is the result of political parties carving out safe districts for themselves and the topic of electoral map bias is perhaps more relevant now than ever. As census results are released to each state in early 2021, many legislatures across the country will redraw the maps. Through comparative analysis and other research methods, I aim to make the case for why electoral map bias hurts democracy and why non-partisan redistricting commissions may be the only way to bring us back together again.Keywords: Political Geography; Redistricting; Electoral Maps

Abstract Code: O8

Presentation Type: Oral Presentation

Presenter(s): Andrea Haataja

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Performing Culture and Landscape in Lindström, Minnesota

Abstract:
Lindström, Minnesota is a small town in the eastern part of Minnesota and is often called “Little Sweden” because of the strong Swedish ethnic background of the town. Throughout the year, Lindström has festivals and events celebrating its Swedish heritage. The downtown area has many shops and restaurants styled with Swedish architecture. Using secondary demographic and historical sources, interviews with leaders, and personal observations I seek a better understanding of just how this community represents and performs their Swedish heritage. In particular, I examine the role of landscape and cultural performance in the way Swedish culture is implemented and represented.Keywords: cultural geography, landscape, heritage, ethnicity, place-making, small town

Abstract Code: O9

Presentation Type: Oral Presentation

Presenter(s): Areej Zahra

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Opioid Epidemic in the United States- Compared to a Global Perspective

Abstract:
Opioid are drugs that can be used under prescription and addiction with these drugs is harmful and can even result in death. This presentation provides an insight on the opioid epidemic in the United States. The U.S. holds a history on the opioid epidemic initiated back in the 1990s. The factors of the opioid epidemic play a vital role in the increase in addiction faced by individuals. Therefore, solutions taken, and the initiatives implemented are in focus to help fight this crisis. However, opioid dependence is not an issue solely affecting the United States. A comparison of countries on a global level helps understand the factors that play a role in the existence of opioid addiction in every location discussed. The global perspective helps provide an insight of the opioid addiction concern in the European countries and certain countries in Asia. Asian countries particularly talked about in this paper are Pakistan, India, China and Japan. A variety of these countries chosen, would give a broad perspective on Asian countries, since not all four of these countries are on the same level of development. In these countries that neighbor each other, the level of development can likely affect the existence of public health issues, such as the opioid crisis. The opioid crisis is not only having huge negative impacts on strong nations such as the United States, but the crisis brings forward a sense of similarity between countries on opposite sides of the world, that differ from the United States in many ways, such as cultural backgrounds. Henceforth, this presentation helps us learn how a huge public health crisis connects countries across the globe.
Keywords: opioids, addiction, prescription, United States, dependence, global perspective, Europe, Asia

Abstract Code: O10

Presentation Type: Oral Presentation

Presenter(s): Jenna Nelson

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effects of Sodium Bicarbonate on Cytokine Production During the Development of Type I Diabetes in NOD Mice

Abstract:
Type 1 diabetes (T1D) is a chronic disease that is prevailing among the U.S. children population, with 40,000 new cases each year. This autoimmune disease occurs when T cells attack insulin-producing β cells in the pancreas, causing hyperglycemia, and a plethora of other serious health complications. Whereas insulin is the only treatment option for a diabetic patient, a prevention, or at least a delay of T1D development would be an ideal intervention. Based on recent literature findings on the effect of baking soda (sodium bicarbonate, SB) on inflammation, we performed a pilot experiment studying the effects of SB on T1D development in the experimental models of T1D. Results suggested a decrease of diabetes incidence and severity of glycemia in SB-treated mice. Since T1D is induced by the action of different population of T cells, mediated through different proteins (cytokines) they secrete, in this study I intend to elucidate the effect of SB on the cytokines produced by T cells during the development of T1D in the non-obese diabetic (NOD) mice. T1D in NOD mice mimics T1D development in humans; during disease progression, the levels of pathogenic cytokines rise, whereas protective cytokines decrease. Thus, it is hypothesized that SB will increase the T cell production of protective cytokines and/or decrease secretion of pathogenic ones in NOD mice during the development of T1D. NOD mice will be treated with 20 and 200 mM SB in a drinking water and sacrificed for quantification of seven different type of cytokines in their spleens by flow cytometry at two different time points, early (14 weeks of age) and later (18 weeks of age) during development of T1D. This study will further elucidate SB's potential as an antidiabetic agent and unveil its mechanism of action in the context of T cells.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O11

Presentation Type: Oral Presentation

Presenter(s): Chryssa King

Faculty Mentor(s): Heiko Schoenfuss

Husky Compact Dimension: Seek and Apply Knowledge

Title: Life-Cycle Exposure of Fathead Minnows to Complex Environmental Mixtures

Abstract:
More than one-third of the Earth's freshwater is used for agricultural, industrial, and domestic purposes leading to the frequent co-occurrence of nitrate and mixtures of contaminants of emerging concerns in aquatic ecosystems. However, little is understood about the consequences of life-cycle exposure of fishes to these complex environmental mixtures. This project examined changes in physiology, performance, and reproduction in fathead minnows across three generations of exposure to agricultural and urban mixtures at environmentally relevant concentrations with an added stressor of nitrate. Exposure of adult fathead minnows in the first, but not second, generation to high nitrate concentrations resulted in a two-fold increase in egg production. In the second generation, the agricultural mixture enhanced fecundity in female fathead minnows above levels observed in EtOH control fish. Contrary to some published studies, neither nitrate nor estrogenic agricultural mixtures stimulated vitellogenin production in male fishes. In contrast, feminization (presence of the egg-yolk protein vitellogenin) was found in first generation males following exposure only to an urban chemical mixture independent of nitrate concentrations. Adult behavior does not appear to be affected regardless of treatment and generation. In contrast, larval behaviors, including predator avoidance performance and foraging efficiency, were both improved in higher nitrate treatments. Using an extended life-cycle fathead minnow exposure, we were able to improve our understanding of the consequences associated with long-term exposures to complex environmental mixtures. Overall, the observed effects of environmentally realistic mixtures were subtle and did neither follow a clear dose-response or matched effects observed in single compound exposures in the published literature. The complexity of interactions between multiple pollutant stressors observed in the current study highlight the need for additional such studies to ensure adequate assessment of environmental risk.

Abstract Code: O12

Presentation Type: Oral Presentation

Presenter(s): Yasmin Fatima, Deepika K C, Mala Hamal, Anoosha Kathi

Faculty Mentor(s): Abdullah Abu Hussein

Husky Compact Dimension: Think Creatively and Critically

Title: Social Commerce Security, Privacy and Trust

Abstract:
Social networking has been a fertile ground for the growth of e-commerce business. Various social commerce activities like Sales, marketing and payment procedures play a vital role in thriving the business. But there are some vulnerabilities in emerging social commerce technology that can put the user's security, privacy and trust aspects in stake. The vulnerability can be either on the system end or in the user's - buyer's or seller's - end. So, in the first part of this paper, we are discussing in detail about the social commerce and evolution of social networking platforms. Then, we will be discussing about the social commerce activities and security, privacy and trust issues with a detailed taxonomy.

Abstract Code: O14

Presentation Type: Oral Presentation

Presenter(s): Haritha Gorla, Sindoora Talakokula, Anusha Kavva, Mounika Telukuntla

Faculty Mentor(s): Hiral Shah

Husky Compact Dimension: Seek and Apply Knowledge

Title: Application of Facilities Systems Management Approach at a restaurant

Abstract:
This project was conducted at a restaurant located in Wauwatosa; Milwaukee. There was also a need to improve and effectively handle them in a better way. The objective of this project was to explore and propose an effective strategy and as well establish a structured process via investigation and research to the problems stated and thereby providing exceptional customer satisfaction. The methodology to be applied here includes an approach that focuses on critical issues and interactions with the restaurant management to identify the problems associated to it and propose a practical solution. Analysis was started to address the issues mentioned in the problem statement. The only possible solution to solve all these issues collectively was to come up with an efficient strategy to improve the overall business of the restaurant. The results will be discussed in the presentation.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O15

Presentation Type: Oral Presentation

Presenter(s): Elaina Fourniea, Connie Knipe

Faculty Mentor(s): Kahar Cainion

Husky Compact Dimension: Seek and Apply Knowledge

Title: Road to Recovery- Elaina's Journey Through Mental Health

Abstract:
We sit down with Elaina Fourniea, Spencer Melby, and John Eggers to discuss the impact that mental health can have on people. Elaina sits down and tells her story of battling through anxiety and depression in order to achieve her goals of getting through college while also maintaining a healthy relationship with her boyfriend. Spencer talks about some of the challenges that anxiety and depression can place on his and Elaina's relationship. We also sit down with John Eggers to discuss some of the ways that college students can take care of their mental health while they are still in school.

Abstract Code: O16

Presentation Type: Oral Presentation

Presenter(s): Jennifer Sonterre

Faculty Mentor(s): Robert Galler, Jason Eden

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Strange Case of Compromise: 1877

Abstract:
Reconstruction following the Civil War was a long and arduous task which left the country unsure of what was next for the country. In the years following the Civil War the powers of the federal government had devolved, which put much of that power and influence into the hands of the states. The election of 1876 pitted Republican Rutherford B. Hayes against Democrat Samuel J. Tilden, neither of who were powerful choices. When the votes were tallied in November 1876, there still wasn't a winner. After much debate, it was decided that an Election Commission should be formed. The Commission would be made up of five U.S. Senators, five U.S. Representatives, and five Supreme Court Justices. Supreme Court Justice David Davis had been tapped to head up the Commission. In the hopes of swaying the decision of the newly appointed Election Commission, the Democrats in the Illinois Legislature abruptly nominated Supreme Justice David Davis to fill a Senate seat that had been sitting vacant for weeks. Davis accepted the nomination but surprised the country but resigning his seat on the Election Commission. Supreme Court Justice, and Republican, Joseph Bradley was named as the new head of the Commission. Bradley cast his vote for the Republican and gave the election to Hayes and the Republicans. This strange case of backroom deals, compromises, and uncertainty shows how important the role of the state legislature can be, not only in their home state, but also on a national level.

Abstract Code: O17

Presentation Type: Oral Presentation

Presenter(s): Elaina Fourniea, Noah Thompson

Faculty Mentor(s): Juli Pitzer, Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: SCSU Histories: Studying Abroad to Alnwick Castle

Abstract:
This documentary is about the history of the SCSU study abroad to Alnwick program. We interviewed 2 alumni, who happen to also be mother and daughter, and 2 faculty about their experiences and the connections they have made through studying abroad in Alnwick. We also discussed a little bit about the history behind the Alnwick study abroad program and the number of people who have been going on this trip, and how that number has changed over the years. The mother-daughter alumni duo had very different experiences in Alnwick, yet the experiences were also very similar, which is something else they can be able to talk about, how the castle and the town has and has not changed over the years. The faculty we interviewed went more in depth about what opportunities students have while studying abroad, and how they were able to help create some of those opportunities and also connections between students and faculty who go on this trip, and also the community in the town of Alnwick.

Abstract Code: O18

Presentation Type: Oral Presentation

Presenter(s): Aasish Pradhananga

Faculty Mentor(s): Bruce Jacobson

Husky Compact Dimension: Think Creatively and Critically

Title: Expression, Purification and Characterization of Cyclohexadienyl Dehydrogenase and Pyrroline-5-Carboxylate Reductase from Sinorhizobium meliloti

Abstract:
Cyclohexadienyl dehydrogenase belongs to the family of oxidoreductase enzyme which specifically acts on CH-CH group of donors with NAD+ or NADP+ as acceptor. It catalyzes the reaction where L-arogenate and NAD+ are used as substrate that forms NADH and CO2 along with L-tyrosine. This enzyme takes part in tyrosine synthesis and cathomycin biosynthesis. As of late, only one structure has been identified for this kind of enzyme. This research was done in collaboration to the New York Structural Genomics Research Collaboration. In order to determine the kinetic parameters of the enzyme (km, Vmax and Kcat) the protein was overexpressed in E. coli and purified using nickel affinity. Kinetics were determined by monitoring NADH disappearance. This work will provide a foundation for future structure/function studies including inhibition studies and site-directed mutagenesis

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O19

Presentation Type: Oral Presentation

Presenter(s): Yasmeena Thabet, Mahmoud Hashish

Faculty Mentor(s): Heiko Schoenfuss

Husky Compact Dimension: Seek and Apply Knowledge

Title: Quantifying Maturation Stages of the Brown Catfish (Ameiurus nebulosus) Reproductive System from the Cuyahoga River

Abstract:
Industrial and agricultural wastes that drained into rivers can affect the fish in their native habitat. In 1969, the Cuyahoga River in Cleveland, Ohio was on fire due to oil spills from the industrial wastes near the area. This fire damaged the environment and caused the death of many fish populations. Since then, many clean-up efforts have resulted in improved water quality for this river. The purpose of our study was to examine the effect of Contaminants of Emerging Concern (CEC) in the Cuyahoga River on reproductive system function and maturation in resident fish. Brown catfishes (Ameiurus nebulosus) from the Cuyahoga River were taken by the US Fish & Wildlife Service (US FWS) to be examined using histological techniques. The gonads from the catfishes were embedded in paraffin, then sectioned on slides to be stained by hematoxylin and eosin. The slides were analyzed for overall gonad maturity and any obvious pathology. Initial results show that there is a variation in the maturation stages of fish gonads and that there is no significant pathology in their reproductive system. This variation in maturation could be an indication of the effect of different water temperatures at the filed sites where each sample was taken or may be related to localized pollutant effects. The insignificant appearance in pathology could be an indication that there is insufficient CEC concentration to negatively affect the reproductive abilities or developmental stages of the catfishes. Fish samples are a great indicator of the overall contaminant load in rivers. This is why it is important to study fishes to better understand how CEC could affect humans if they get exposed to the polluted rivers.

Abstract Code: O20

Presentation Type: Oral Presentation

Presenter(s): Charles Christen

Faculty Mentor(s): Heiko Schoenfuss

Husky Compact Dimension: Seek and Apply Knowledge

Title: Fathead Minnows and The Aftermath of Chemicals in The Environment

Abstract:
The health of fish population is of growing public concern as pollutants in runoff from agricultural and urban areas are washed into aquatic ecosystems such as the tributaries that feed the Great Lakes. Among these pollutants are contaminants of emerging concern (CECs) which are a diverse range of industrial compounds, personal care products, pharmaceuticals, and naturally produced steroid hormones. These CECs can interact within existing cellular pathways or metabolic processes resulting in detrimental changes to fish behavior, physiology and morphology. The objective of this research is to identify CECs mixtures that pose a risk to fish population health due to their presence and concentrations in the Great Lakes tributaries. Through recent sampling of water, sediment and fish tissue in the Great Lakes watershed the presence of CECs is well established. Using stored blood plasma that had been collected from fathead minnows (Pimephales promelas) which were exposed to waters from nine field sites in the Great Lakes (Summer 2019) I quantified blood-based endpoints which are diagnostic of the effects seen in fish exposure to CECs. Enzyme-linked immunosorbent assays (ELISA) were used to measure plasma vitellogenin concentrations, plasma estradiol concentrations, and plasma testosterone concentrations. These concentrations were then compared with water chemistry and fecundity data from each field site to determine stream reaches where fish populations may be at risk due to the presence of CECs. A total of 332 total fathead minnow plasma samples were analyzed with at least 30 samples from each treatment. All ELISAs ran for vitellogenin, estradiol, and testosterone had R2 values over 0.95 indicating high quality data. The results show that there were two treatments that made a significant change to fecundity. The concentrations of vitellogenin, estradiol, and testosterone along with resulting changes in fecundity can help pinpoint areas that water quality can be improved to maintain natural resources.

Abstract Code: O21

Presentation Type: Oral Presentation

Presenter(s): Bijaya Ghorasainee, Sanjeev Regmi

Faculty Mentor(s): John Sinko

Husky Compact Dimension: Think Creatively and Critically

Title: Laser Production and Characterization of Zinc-Oxide Nanoparticles

Abstract:
Zinc Oxide nanoparticles have different physical, electrical, optical and biological properties. The main objective of this project to ablate the Zinc Oxide nanoparticles with the help of YG laser and the size of the nanoparticles should be less than 10 nm. ZnO nanoparticles were obtained in deionized water by laser ablation in liquid. Zinc Oxide Nanoparticles were prepared in neat deionized water by laser ablation on the physical 2D motional micro stage model programmed by Arduino with the addition of surfactant to reduce aggregation and the surface tension of the deionized water. Various purification methods involved in this process is filtration and centrifugation method that reduces the aggregation and strengthen the purity of zinc oxide nanoparticles. The ablated Zinc Oxide nanoparticles are analyzed with the help of Dynamic Light Scattering method (DLS), Scanning Electron Microscopy (SEM) and optical profilometry. The obtained smallest size of zinc oxide nanoparticles through our research is 70 nm which is analyzed with the help of the DLS method. 2 Dimensional and 3 Dimensional properties are shown by the optical profilometry and its special characters are detected by SEM. Various factors affecting the size distribution of ZnO nanoparticles are the type of liquid medium, energy fluence, wavelength, frequency, pulse duration and ablation period.

Abstract Code: O22

Presentation Type: Oral Presentation

Presenter(s): Kayla Nessmann

Faculty Mentor(s): Tamrat Tademe

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Asia as our Technology Landfill: A Feminist Perspective

Abstract:
After buying the newest iPhone or laptop, what do we do with our old technology? Does it get thrown away or "recycled?" This presentation discusses where our technology goes and uses a feminist perspective to explore the ways in which Asia is exploited as a world-wide technology landfill, and the environmental and human impacts that follow. This presentation will give a brief overview of how our technology ended up in Asia, by explaining the rise of technology and capitalism. Capitalism has regressive effects on both the environment and marginalized communities. Since capitalism leads to large wealth inequality amongst classes, it affects everybody differently; this is where intersectionality comes in. Intersectionality is the overlapping relationships between social categories such as race, gender, and social class. Intersectionality is an integral part of recognizing which communities are disproportionately impacted by improper electronic-waste handling and disposal. Women, people of color, and those who are socioeconomically disadvantaged are the most impacted in terms of health and livelihood. Using an intersectional lens to explore this topic, this presentation will highlight a consumer's power, ways to hold technology corporations accountable, and how to become environmental advocates for change.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: O23

Presentation Type: Oral Presentation

Presenter(s): Mark Wasson

Faculty Mentor(s): Juli Pitzer

Husky Compact Dimension: Think Creatively and Critically

Title: Protests and Pepper Spray

Abstract:
Since at least 2015, the U.S. has seen an increase in political protests, both in frequency and intensity, which journalists have covered despite potential mental and personal safety risks. The story gets coverage, but often the public does not have the opportunity to see the behind-the-scenes or understand what news media personnel experience in order to get the story to the audience including what transpired at any given event. While most protests would be considered non-violent, there is always a risk in recent political protests to be ignited and turn violent. These situations put journalists in a precarious place. Why do journalists choose to cover these events? What does the public gain from their perspective? This purpose of this short documentary is to follow one journalist's experience, hear from his perspective, and provide a window into the world of journalistic protest coverage. This video was created in MCOM 338 Documentary Production course as a single-person narrative. As both a journalist and documentarian in this role, I followed the story of J.D. Duggan of the Pioneer Press' coverage of the protest during President Donald Trump's rally in Minneapolis, MN in Fall 2019. This story shows the intensity of a highly charged protest while also giving the audience a glimpse into the thought process of a journalist. It attempts to illustrate the multiple dynamics of current political discourse in the United States and how journalists navigate through this content. The film is shot from an observer perspective as I passively recorded the events as they unfolded, while covering J.D.'s experience. Through an on-site interview in the action as well as a post-interview, I was able to capture some of the thought process and obtain the voice of the journalist. This approach has become an increasingly more common embedded style to journalism by going into a crowd and showing their experience through their eyes.

Abstract Code: O24

Presentation Type: Oral Presentation

Presenter(s): Mohamed Yusuf

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Think Creatively and Critically

Title: Exploration of Unemployment Insurance Benefits on Unemployment Duration

Abstract:
Years after the Great Recession and in an era of big data, what are the effects of unemployment insurance (UI) benefits on unemployment duration of respectively recipients and non-recipients, and do the findings of the current literature still hold? The project will also attempt to explore if positive effects that macroeconomic theory suggests of UI benefits on recipients still hold? However, one of the limitations of examining UI benefits is that most studies have focused solely on unemployment duration, the project will try if there are other contributing factors to unemployment duration.

Abstract Code: O25

Presentation Type: Oral Presentation

Presenter(s): Michael Fry

Faculty Mentor(s): Matt Barton

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: The Alt-Right a Discourse Analysis

Abstract:
Nazi. This word often conjures up a dark image of human history for those who hear it. Today those who identify with the ideology put forth by Hitler's followers have rebranded themselves with more palatable terms such as Alt-Right or White Nationalist. While this ideology has changed its name it still largely resembles its origins from the WWII era. This ideology has changed its clothing, it has changed its style. This project is intended to inform and bring light to the modern style of Nazi ideology. One of the more popular names for this style is the Alt-Right. The most basic understanding of this term refers to those who align themselves on the far right of the political spectrum. The term Alt-Right has wider implications than being simply a marker of political affiliation. It is a label of a certain culture and style. While this project is intended to inform about what this style looks like, it is also created with the intention to start a conversation about how we address the discourse of ideologies like the Alt-Right. Society tends to hide what it is uncomfortable with, but it is important to realize the dark side of the cycle history has come back around and has brought with it a renewed popularity around the world of Nazi like ideologies. In order to prepare ourselves for the possible ramifications that come with these ideologies, it is important to understand the values of those who engage with these ideologies and how they construct their style.

Abstract Code: O26

Presentation Type: Oral Presentation

Presenter(s): Kayla Justice

Faculty Mentor(s): Matt Barton

Husky Compact Dimension: Think Creatively and Critically

Title: "Where am I and how did I get here?" An Examination of the Unknown In Patrick McHale's "Over the Garden Wall" as an American Animated Otherworld

Abstract:
Cartoon Network's Over the Garden Wall is an American animated miniseries that offers an extended exploration of a neo-Americana otherworld, referred to as the Unknown. OTGW is unique in its treatment of the otherworld trope in several ways, not least of which is its inherent ambiguity and quintessentially New England-esque landscape. Compared with other contemporary and more historical otherworld adventures, OTGW is concerned less with the emergence of the otherworld and more with its protagonists' interactions within it. OTGW inverses the traditional literary otherworld trope by shifting its focus from the leaving-and-returning narrative to a being-and-returning structure instead. Where other otherworld storylines, both literary and animated, hinge much of their emphasis on the character's departure from the commonsense reality and arrival in and navigation of the otherworld, OTGW opens in the in-between: with two lost boys in the woods. By starting in the in-between, OTGW necessarily (and immediately) positions both the protagonists and spectators in a state of discomfort. As a "standalone" artifact, OTGW does something that, arguably, other animated otherworlds that are based on literary otherworlds do not, and perhaps cannot, do; that is, OTGW forces the spectator into a position of anamorphosis and non-closure in the same way it forces protagonists Wirt and Greg into these liminal and inconclusive spaces too. The spectator can no longer rely on external knowledge to help guide them through. This presentation is designed around my graduate thesis, and will explore how the Unknown participates in, diverges from, and indeed creates a uniquely American animated otherworld tradition.

Abstract Code: O27

Presentation Type: Oral Presentation

Presenter(s): Patricia Wollan

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: A Small Town with Big Developmemt

Abstract:
Less than an hour's drive up I-94 West past St. Cloud is a small town of just over 4,000 people. This town, rich with agricultural history, contains several banks, restaurants, shops, a movie theater, over ten places of worship, and the boyhood home of Sinclair Lewis. Sauk Centre, Minnesota is a small town whose population has increased steadily over the last thirty years. The reputation often given to rural agricultural communities is that their inhabitants are closed minded and closed off, unwelcome to change, afraid of outsiders, and are ethnically not very diverse. This study seeks to show how Sauk Centre became a small pocket for change in the countryside of Stearns County, whether it be ethnically, economically, or something else. The questions that will be asked all pertain to the development of this small town. Why does Sauk Centre have so many kinds of churches when surrounding towns have only one or two? Why does the town have a movie theater, more shops, and restaurants when surrounding communities of similar populations can only host a few? What makes it a prime location for immigration and for families who camp on the banks of Sauk Lake every summer? All of these questions will answer how Sauk Centre became what it is today: a small town with big development.

Abstract Code: O28

Presentation Type: Oral Presentation

Presenter(s): Joshua DeRoode, Sue Nelson, Andrea Deutsch

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Campus Laboratory School

Abstract:
On any given day in the 1980s, about two hundred and fifty would arrive at a unique school on the campus at St. Cloud State University. The Campus Laboratory School attracted both students and teachers genuinely excited and motivated to work in a school with few walls and boundaries. The Campus Laboratory School served as a vital link between theory and practice, knowledge and application. Student-driven and instructor-guided practical experiences in industrial arts, swimming, and interpersonal communications, in addition to traditional subjects, sought to promote the child's maximum involvement. The Campus Laboratory school existed alongside the university for 114 years until its closing in 1983. This video will discuss the history of the Lab School and the vital role it can still play in a failing educational system that is obsessed with the bottom line. This project uses administration records, along with personal interviews of former students and staff of the school. The current Dean of Education at St. Cloud State University Jennifer Mueller provides a look at what a new Campus Laboratory School would look like.

Abstract Code: O29

Presentation Type: Oral Presentation

Presenter(s): Marissa Hendrickson

Faculty Mentor(s): Robert galler

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Tower, MN: More than a Mining Town

Abstract:
The City of Tower, Minnesota is most well known for it's mining history as the Tower-Soudan iron ore mine is located there on the Vermillion Range. The city of Tower, however, has a rich history outside of the mining industry. Long before Charlemagne Tower came to Tower to invest in the mining industry, the Bois Forte Band of Chippewa called those lands home. Native peoples participated in fur trade and interacted with European settlers for their own livelihoods and interests once contact was established. Additionally, due to the iron ore mining, the area's growth is built largely from immigration. The presentation will highlight the peoples who moved into the area such as the large Finnish population. To close the presentation and bring it to present day, it will cover efforts for tourism such as its parks, Fortune Bay Casino, and Lake Vermillion activities, as well as efforts for preserving heritage of not only the Natives, but also immigrants. This oral presentation will be presented in a timeline format.

Abstract Code: O30

Presentation Type: Oral Presentation

Presenter(s): Kylee Glen, Marissa Hendrickson, Mark Wasson

Faculty Mentor(s): Juli Pitzer, Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: From Struggle to Success

Abstract:
In light of St. Cloud State University's sesquicentennial year, this project reviews a slice of history that exposes racial relations between students and faculty on campus in the late 1960s and early 1970s. Then known as St. Cloud State College, this analysis reveals the struggles of minority students while simultaneously exposing the successes of SCSU faculty today. To do this, students from the History and Mass Communications Departments collaborated in creating a documentary to envision those struggles and successes. Although history is overwhelmed with detriment to minority students, our goal seeks to highlight the agency and the drive to succeed by those same students. Furthermore, our project explores the experiences of Les Green, alumni and former SCSU professor, during a time when racial tensions were elevated. In addition, we interviewed Ethnic, Gender and Women's Studies Program Chair Chris Lehman to highlight his recent accomplishments at SCSU in the renaming of Ruby Cora Webster Hall. These gentlemen support our project by revealing the real-life experiences of struggle to success, while also promoting to visualize a better world for everyone. Moreover, we relied on the SCSU archives to supplement our research with photographs, oral histories and documents that reveal those student experiences. It is the hope that this study will inform the students of SCSU today about our rich and diverse history.

Abstract Code: O31

Presentation Type: Oral Presentation

Presenter(s): Chamira Manthrige, Shiyam Kannan, Pranav Mandlik, Kavya Pokuri, Vaishnavi Sattagopam

Faculty Mentor(s): Hiral Shah

Husky Compact Dimension: Seek and Apply Knowledge

Title: Implementation of a pull system for Chart Industries, Inc.

Abstract:
Chart Industries, Inc. is one of the largest manufacturers of cryogenic tanks. Operations at their plant at New Prague, MN, is the focus of this project. Two areas, the machine shop and the plate storage yard, were identified by Chart Industries, Inc. to benefit from the implementation of a pull system. These areas currently store large quantities of material and hence, a significant portion of cashflow is frozen in inventory. In addition to this, valuable floor space at the plant was consumed by the inventory. Moreover, material was routed through too many points, which added to higher costs. The goal of this project was to present Chart Industries, Inc. with at least 3 solutions which can be used to transform their current inventory management system used in these areas to a pull system. In order to accomplish these goals, the project started with studying their current system. Then a brief economic analysis yielded the benefits and the costs of using a pull system. After which the team got together for a brainstorming session to generate as many potential solutions. These solutions were then evaluated in a decision matrix and the best 3-5 solutions were selected. The proposed solutions were developed with a focus of cost savings and designed with a potential to unearth other issues currently hidden due to excessive inventory. These solutions selected were further developed and presented to the company.

Abstract Code: O32

Presentation Type: Oral Presentation

Presenter(s): Hassan Hirei

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: A comprehensive taxonomy of SQL-injection attacks

Abstract:
AuthorHASSAN HIREIEmail: hhirei@go.stcloudstate.eduAdvisorProf. Dr. Mark SchmidtEmail: mbschmidt@stcouldstate.eduAbstractIt is very clear that internet technologies have gone far beyond anyone can ever imagine and everything must depend on it. With that technology growth and advancement especially on the web-based applications, challenge of data security has become one of the most critical factors to tackle in this digital age. Almost every web-based application has a database at the backend to house the data, and SQL-injection attacks became one of the most serious attacks against databases. In addition, confidentiality, integrity, and availability are the major pillars of any data security and a simple successful SQL-injection attack can destroy all those fundamental pillars of any database system. SQL-injection attack was used for most of the cyber breach incidents in the recent years which made this attack to become almost unescapable. There are many studies that were done in the past to tackle with SQL-injection attacks. However, the past studies did not introduce a taxonomy of SQL-injection attacks. Therefore, the main objective of this work is to present a comprehensive taxonomy of SQL-injection attacks that will educate everyone about SQL-injection attack and its types.Keywords: SQL-injection attacks, Internet Securities, Taxonomy, Web-based applications, data security

Abstract Code: O33

Presentation Type: Oral Presentation

Presenter(s): Kyle Rozendaal

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Neural-Network Based Intrusion Detection Systems

Abstract:
Before the days of the personal computer, nobody believed that the terminal-mainframe relationship that was the core of computing was ever going to die. With the advent of the public internet, every computer became a line into the largest database of knowledge the world had ever seen. When wireless cellular devices were created, people were no longer tied to phone-booths and landlines to conduct their business calls. With the advent of the smart phone and social media, billions of individuals have become interconnected in a global web of information the likes of which has never been rivaled.These inventions that define the modern information age started landing in consumer's homes in the 1970's. With this ultra-fast rate of development and change, humanity is still working on coming to grips with this new reality of perpetual-inter connectivity. Employers are scouring social media for performance indicators of potential employees while big-tech companies are scouring search histories and profiles for indicators of viability for certain advertisements to maximize profits. These technologiesâ€"in the era of big dataâ€"have completely altered how humans interact with the spaces they imbibe.All past technological and paradigm shifts in the technological culture depend, however, on one base assumption: Humans are the drivers while computers run the tasks.There is another paradigm shift coming down the pipe that will forever change the way humans interact with their devices and we can see the early signs of this emerging technology in Tesla's self-driving cars. Rather than humans being the thinkers that assign tasks to computers, the computers will do the heavy lifting and will ask for human input on strategic/logical matters. My paper applies this theory to the field of intrusion detection and prevention, explores the various models of neural networks, their applications, designs, similarities, and differences. Neural Network-based IDS/IPS is the logical next step in the era of big data. I will compare these differences and prescribe a "good-practices" model to the field of Neural Network-based IDS/IPS. I argue that a paradigm shift in the way we approach computing must be accepted before a truly autonomous intrusion detection system can be implemented.

Abstract Code: O34

Presentation Type: Oral Presentation

Presenter(s): Naif Alhajri, Amer Alkharashgah

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Digital forensics 681

Abstract:
the project is to investigate a fictitious case that does not exist at all. my job is to create a fictitious case and let people assume the solution.

Abstract Code: O35

Presentation Type: Oral Presentation

Presenter(s): Doua Moua, Bibek Gurung

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: The murder case of Connie

Abstract:
Connie was killed in her home 2015. Her husband, Richard claim that he heard the alarm went off and came home. When he got home, he was immobilize and torture by the intruder. Connie killed as she came home from the gym.

Abstract Code: O36

Presentation Type: Oral Presentation

Presenter(s): Jonathan Corbin

Faculty Mentor(s): Rob Mann

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: A Ground Penetrating Radar Survey of Lower Town at St. Cloud State University

Abstract:
The shadows of St. Cloud State University's initial steps into the sprawling campus of higher education we see around us today still lay tens of centimeters below the snow trodden earth. Patrons, parents and staff walk the paths of concrete that cover our institution's history with little to no knowledge of what came before. With dawning of the sesquicentennial it seemed necessary to peer into that past and unite it with the present. In May of 2018, with the completion of a special problems class, I secured a Student Scholarly Project grant through Research and Sponsored Programs to conduct a non-intrusive survey of specific areas of Lower Town. Grant funds were used to hire a geoarchaeologist, Veronica Parsell, with Cardno Inc. The GPR survey focused on three areas, the pioneer cemetery near the Miller Center, the area in which Old Main stood east of Stewart Hall, and the theorized location of the first educational building on SCSUs campus, the Stearns House. GPR returns in the case of the latter show strong signs that the remains of the Stearns House rest yet under the campus its humble beginnings gave birth to.

Abstract Code: O37

Presentation Type: Oral Presentation

Presenter(s): Yasmin Fatima, Siva Naga L Swamy

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Seek and Apply Knowledge

Title: Solving Industrial Espionage Case Using Digital Forensics Tools

Abstract:
The rapid evolution of Information technology and digital devices has also made cybercrimes increased at the same pace. In response to growing computer crimes, the field of Digital Forensics has emerged. This involves collecting digital data from suspect's computers, which are then used as evidence to prosecute a criminal.Nowadays in businesses, all their business activities are fully automated to decrease time and effort and increase their productivity. Though it is ideal to use digital technology in businesses, it has also increase Industrial Espionage using different digital gadgets to illegally trade business secrets to rivals or competitor businesses.In our Digital Forensic Case, we will be solving an Industrial Espionage case. In recent months, Elite Group Inc. has reported an unauthorized malware attack occurred several times on their website. Additionally, a recent company audit report shows a significant loss of revenue as compared to the previous year. It is also reported by different employees that Mr. George Willis, the newly hired IT Manager has suspicious behavior around employees. Mr. Jake Anderson, the software engineer, recently bought a new house and two Rolls-Royce Sweptail for his family, with his average income. Mr. James Kumar, the Production Manager has also not reported to the office for the last two days.Due to the above scenario Mr. Tom Hilton, the CEO of the company has hired us (a digital forensic team) to investigate the matter and to find out if there is a culprit in the company. As a digital forensic investigator, we will first take Mr. George's, Mr. Jake's and Mr. James' company's computers in our custody. Then we will use different available tools to search and recover possible digital evidence from these seized computers. Lastly, with our evidence, we will try to find if there is any link between Mr. George's suspicious behavior, Mr. Jake's spendthrift and Mr. James' disappearance with the company's loss and malware attacks.

Abstract Code: O38

Presentation Type: Oral Presentation

Presenter(s): Pooja Pawar, Prashant Sharma, Venkata viswanath Kajjam

Faculty Mentor(s): Hiral Shah

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Design of Experiments for characterizing the Mass Grinding Process

Abstract:
Abstract:Manufacturing of heart valve at a medical device company involves several processes, one of them is mass grinding. This project was conducted at a medical device company which had problems related to the mass grinding process such as lack of clear process specifications on drying process, uncharacterized parameters which included amount of solutions, mass grinding time, and so on which lead to a variable output. The objective of the project was to characterize the parameters using design of experiments (DOE) and to submit a proposal for reducing the batch processing of valve-parts for future usage. The results from this project will be discussed in the presentation.

Abstract Code: O39

Presentation Type: Oral Presentation

Presenter(s): Victor Rojas, Tianyu Lu, Jessica Mukazi Ngango, Jared Selvamoney

Faculty Mentor(s): Hiral Shah

Husky Compact Dimension: Seek and Apply Knowledge

Title: Improving Material Flow and Storage at a Precision Machining Facility

Abstract:
The purpose of this project was to apply the knowledge acquired in Facility Systems Design course offered in the Master of Engineering Management program in a real-life facility. The study was conducted in a precision machining company Minnesota. This machining company was having issues in the shipping and receiving area since only one dock was used for both purposes. The company was also having storage issues because the storage of raw materials was interfering with the storage of finished products. To initiate this project, a time study was conducted for the 5 most representative processes in the facility to find the bottle-neck activities and to evaluate whether the line was balanced or not. An analysis was conducted through the facility floor to check if there were any interferences among factors such as materials flow, personnel flow, backtracking, delays, and unnecessary storage. These factors were analyzed because of the negative impacts they posed in the factory's productivity and some of them represented a potential safety hazard. After recording and compiling the necessary information in terms of time studies and material flow, a process flow chart was constructed to have a better understanding of the actual process. The 5 different process lines were analyzed and balanced. Finally, with the information compiled about material flow, minor changes were provided in the facility floor layout. The changes suggested did not involve any major facility redesign due to the high costs of moving machinery around the factory floor. Other results will be discussed during the presentation.

Abstract Code: O40

Presentation Type: Oral Presentation

Presenter(s): Maggie Powers

Faculty Mentor(s): Kelly Branam Macauley

Husky Compact Dimension: Seek and Apply Knowledge

Title: "This Is What Community Should Look Like": an Ethnographic Study of Community Building Within a Local Nonprofit Organization

Abstract:
This ethnographic study is based off of six weeks of participant observation and ethnographic research with Neighbors to Friends, a local grassroots organization in Central Minnesota that facilitates a free laundry program and runs a mobile shower vehicle that provides showers to those experiencing homelessness. By fully participating in the day-to-day operations of Neighbors to Friends, the purpose of this project is to gain a holistic understanding of how this unique nonprofit organization creates a sense of community for those experiencing homelessness and poverty. Nancy Dyson, the director of Neighbors to Friends, has a leadership style that allows for volunteers, community partners, and the people they serve to take ownership in the program and creates a sense of community where all are welcome. In a capitalistic society, people are often seen as commodities and value is often placed on a person based on what they can contribute to society financially. Neighbors to Friends rejects this ideal and finds value in people just because they are human. By comparing my observations to scholarly research about community and grassroots leadership styles, I argue that Neighbors to Friends not only meets the physical needs of marginalized individuals experiencing homelessness and poverty, but fosters an environment where community is created and the need to belong is met as well.

Abstract Code: O41

Presentation Type: Oral Presentation

Presenter(s): Kassandra Saphire

Faculty Mentor(s): Jason Eden

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Pushing Back: Lesbian resistance against the Nazis

Abstract:
I'm doing my thesis on Lesbians during the Holocaust. For my project, I plan on providing brief summaries of factors before and during the Holocaust, to provide context for my argument, which is that Lesbians not only existed at the time (whether they used the term "lesbian" or not) but contributed to society, fighting back against oppression in whatever ways they could. To be clear there was no unified effort, but individual actions, large and small, that resisted the Third Reich. From subversive art to hiding Jewish neighbors, lesbians fought back.

Abstract Code: O42

Presentation Type: Oral Presentation

Presenter(s): Jennifer Sonterre

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Anoka County: Logging and Industry

Abstract:
Anoka County is a suburb of the Twin Cities with a population of 350,000. Most people know about Anoka because of its history of Halloween celebrations and parades, but the history of Anoka County is more complicated than just "The Halloween Capital of America." Anoka had been a neutral ground for the Dakota and Ojibwe tribes in the 1700s. The name Anoka was derived from Dakota and Ojibwe words describing Anoka as "both sides of the river" and "working waters." The city was settled in the mid-1800s as a logging community that grew into a thriving community, built around the Rum and Mississippi rivers. Loggers and farmers played a role in the settlement of Anoka. As the Dakota and Ojibwe knew, the Mississippi and Rum Rivers were the lifeblood of early Anoka. The rivers drew settlers here during the height of the Minnesota logging era in the mid-1800s. Industry in Anoka grew out of the logging industry and changed the landscape of Anoka County. Anoka became the center of potato production and a community was formed. That continues today as the downtown area of Anoka is alive with new stores, restaurants, and businesses that help to shape what Anoka is today. Anoka may only be seen as a suburb that has capitalized on Halloween, but it was the confluence of two rivers and the industry that followed that put Anoka County on the Minnesota map.

Abstract Code: O43

Presentation Type: Oral Presentation

Presenter(s): Michelle Skroch

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Iron Giants: Corporations of the Mesabi Iron Range

Abstract:
The history of the Mesabi iron range often conjures up images of rich iron ore gracing the landscape of Northern Minnesota, a simple place that attracted simple people. The reality is far more complicated. The mining was not a streamlined process of discovery to prosperity. It attracted competing visionaries of all kinds looking for wealth starting with the Merritt brothers and eventually attracting corporate giants like John D. Rockefeller and Carnegie's U.S. Steel. Multiple companies engaged each other in court and in the mines, each trying to gain the upper hand and control the immense wealth of the Mesabi mines. It was a corporate battleground and the fight shaped the Mesabi iron range into the nation's iron powerhouse on the backs of immigrants and their descendants.

Abstract Code: O44

Presentation Type: Oral Presentation

Presenter(s): Caleb Campbell

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: Debunking Myths about the town of Little Falls

Abstract:
While many people probably view Little Falls as only a small town in Minnesota, or probably don't know much about it at all, I am here to inform you of other important things about the the town in Central Minnesota known as Little Falls. I will be doing extensive research on the matter and will be focusing on debunking myths that people have on the town. I would like to give you all different perspectives on the subject, which is a very important theme in History as a whole. I will use many different types of sources from a variety of different time periods to show how things have changed over time. Also, this will show what different sources have to say about the town and how they differ, or are similar. It will be interesting on how they match up with the myths of being small, having a lot of old people, and fishing.

Abstract Code: O45

Presentation Type: Oral Presentation

Presenter(s): Stephan Jacobson

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Decoding the Myths of Main Street: an Historical Analysis of Sauk Centre, Minnesota

Abstract:
In his novel Main Street, Sinclair Lewis gave a less than flattering portrayal of the town of Sauk Centre, Minnesota where he grew up and lived for a portion of his life. For most, this is about all they know of Sauk Centre, the smug and conservative "backwardness" satirized as Gopher Prairie, if they even know that. This project will present a more complex history of this small, middle-American town, including not only stories of great tragedy, but also stories of success and determination. The history of Sauk Centre goes back many generations, with roots in both missionary work and fur trading. And while not all of these ventures proved successful, some of them stayed steady just enough for a small community to build itself, stabilize, and grow. Through examples of successes and failures, tragedies and triumphs, this research project will show how the town of Sauk Centre has adapted and changed over time, and how it is more than just Gopher Prairie.

Abstract Code: O46

Presentation Type: Oral Presentation

Presenter(s): Jacob Smith

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: Economic History of Sauk Center

Abstract:
Sauk Center is a city in Central Minnesota of about 4,000 people, named after many places around the city that were named 'Sauk', including the Sauk tribe and the Sauk River. The town was settled in 1856 and it received it charter in 1889. This project seeks to highlight many of the important characteristics that led to the town's growth including some that may not be widely known. The town grew as a farm town that traded many dairy products and other farming materials, and the town would receive a railway station in the 1930s which greatly influenced the town's growth. However, in the ever changing world, the town has grown much more slowly since the Second World War, and that has impacted the town's economy in many ways that may not be highly advantageous to the town.

Abstract Code: O47

Presentation Type: Oral Presentation

Presenter(s): Rajitha Dissanayake, Yoshiko A Rosales

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: The Lower Sioux Reservation, 1862 Uprising and the Dakota People - Debunking the stereotypes.

Abstract:
When people think of Native reservations, they picture them to be poverty-ridden, full of alcoholism, unemployment and lower standards of living, but no one tries to see what led them to this lifestyle, and paved way to these issues or how the Native people ended up living in reservations. In this presentation I'm going to research on the Lower Sioux Reservation and its Mdewakanton Dakota people and show what led them to reservations in 1850s and how the natives live in reservation today and to debunk some of the stereotypes that people have about life on reservations. The 1851 treaties of Traverse des Sioux and Mendota with the US government confined the Native Dakota people to reservations and this forever altered their traditional ways of life. This severed the natives from their sacred homelands and they lost their entire means of subsistence by being constricted to a defined area in exchange for food, supplies, and regular payments from the U.S. government. The main goals of Native reservations were to bring Native Americans under U.S. government control, to minimize conflict between Indians and the European settlers and thereby forcibly encouraging Native Americans to take on the ways of the white man. The lower Sioux Reservation is also significant when talking about the US-Dakota war of 1862, which many people think was started by the Dakota, but in fact years of oppression's faced at the hands of white settlers, broken unfulfilled and violated treaty obligations, including the failure to make payment on lands purchased and the insufficient provisions by the government which resulted in starvation and disease and the daily assaults in their traditional ways of life compelled the Dakota to wage war to survive in their own homeland. I will also talk about important events, periods and people related to the lower Sioux Reservation. Minnesota was, is and will always be Dakota land - "Mni Sota Makoce - The Land where the Water reflects the Sky"

Abstract Code: O48

Presentation Type: Oral Presentation

Presenter(s): Chris Boots

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: More Than Sinclair Lewis: The Development of Sauk Center, Minnesota

Abstract:
Sauk Centre, Minnesota is most notably known for being the home of Nobel Prize winning author Sinclair Lewis, however, there are many other aspects of the town that are important to recognize in its growth and development. For instance, one aspect that credits Sauk Centre's development is their success in agriculture. Sauk Centre was also home to a branch of the Great Northern Railway which was established in the late nineteenth century. In Lewis' book Mainstreet, his portrayal of Gopher Prairie, which is based on Sauk Centre, insinuates the town as ugly and the townspeople as not caring about social or cultural issues. The negative descriptions that come from Lewis' book do not accurately represent the people, or the values and the importance Sauk Centre has had on Minnesota. Sauk Centre is a community that while close knit, has contributed to the overall development of Minnesota much like many other small towns across the state and this is evident through its development of agriculture, railways and much more throughout history.

Abstract Code: O49

Presentation Type: Oral Presentation

Presenter(s): Christian Noyes, Kyle Larsen

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Duluth: A Multiplex of Human Experiences

Abstract:
When most Minnesotans think about the Duluth area, they often think of the discovery of iron ore, industrialization and the many tourist attractions that riddle Duluth. From charter fishing to theater and arts, Duluth has become among the top destination spots for Midwesterner vacationers. Under the surface however, Duluth is vibrant with rich history that people can learn and experience. Underneath the surface of arts, theater, fishing, and remanence of industrial warehouses and factories, are individuals who struggled, married, discovered, and explored. By exploring some of the historical sites across the Duluth area, one can see how Duluth isn't just a tourist destination. Rather, Duluth is home to the Ojibwe people, home to World War II flying ace Dick Bong, and home to entrepreneur Chester Congdon. These people tell a story of Duluth and how Duluth has become the destination it is today. Each of these people and groups reveal how varied the human experience is especially in a specific location like Duluth. Each of these people tell varied perspectives of Duluth. Seeking these experiences and applying them to reveal the diverse human experiences that are all linked together by one central location, Duluth, is the goal of this presentation.

Abstract Code: O50

Presentation Type: Oral Presentation

Presenter(s): Yoshiko Rosales, Jayasinghe Dissanayake

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: Dakota History is Minnesota History: The Importance of Education on the Lower Sioux Dakota Tribe

Abstract:
In Minnesota history, we are aware of the European colonizers, the power figures associated with certain events/places, and accomplishments they made for our state to be as it is today. Although, there seems to be a gap in our history lessons; Dakota people were the first to inhabit this state and had been living in, what is now Minnesota, for hundreds of years prior to the arrival of the Europeans. Recently, there are more classes and programs that focus on indigenous studies and history, but in comparison to other educational programs, this is fairly new. Considering Dakota people specifically, in this research project the Lower Sioux Community will be the focal point. With this stated, we will briefly discuss the U.S Dakota War but we aim to focus on more information before and after the war, the region's history, events leading up to the U.S Dakota war, treaties (some that are currently being tried in court) and more on the history of the Lower Sioux Community. We will be incorporating various sources such as novels from Native authors, such as Waziyta Win's books What does Justice Look Like, Remember this, and Through Dakota Eyes. Along with treaty doctrines, journals, manuscripts and other sources through online data bases.

Abstract Code: O52

Presentation Type: Oral Presentation

Presenter(s): Pamela Ogoye

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Look at Duluth

Abstract:
The city of Duluth is presently known as a tourist destination, but it is a town rich with history and in its heydays was home to the most millionaires in the United States. My research will highlight how Duluth reached its highpoints and what contributed to its decline. I will show how making Duluth a terminus for the Great Northern Railway, the discovery of iron ore in the Mesabi Range, and the construction of the Duluth Shipping Canal through Minnesota point in 1871 led Duluth to its economic growth. I will also exhibit how the growth of the timber industry contributed to the growth of Duluth. Even Today, Duluth remains one of the most important centers of shipping on the Great Lakes. Research from history sites in Duluth plays and important part to the University of Minnesota and Historical site because that land holds great historical, spiritual and personal for its original stewards, it is also holding seaway which has connected Minnesota to other nations and to the world.

Abstract Code: O53

Presentation Type: Oral Presentation

Presenter(s): Blaine Olson, Christopher Boots

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: Sauk Centre

Abstract:
Sauk Centre is believed to be a farming community and was always a farming community. With it also being a religious small town community with only one type of church. In the mid 19th century, Sauk Centre started as a transportation hub for goods in central Minnesota. It would distribute the goods to Osakis, Alexandria and then south to Benson. In 1858, Sauk Centre was used as a middle ground for traders and distributers. Throughout the late 19th century, Sauk Centre grew in size and became one of the more populous small town cities in the area. Starting out as Catholic society, there was only one church in the very beginning of the town. During the 1890s and early 1900s, the Presbyterians started to migrate into the area and this caused a diverse religious system in the town. In present day Sauk Centre, there are now eight churches for 4,300 people.

Abstract Code: O54

Presentation Type: Oral Presentation

Presenter(s): Curtis Kendrick Walton

Faculty Mentor(s): Mark Jaede

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Hip Hop's Case for Freedom

Abstract:
My project is an examination of the history of hip hop culture and its close relationship with political discourse in America. My argument is that hip hop shapes how Americans talk about politics and through close examination, I contend that the only way to effectively combat institutions of oppression, is to listen to the voices of the marginalized and craft policies based on those experiences. America has had a long history of suppressing voices; and for a long time, hip hop has been an after thought in academic and political circles when in actuality, hip hop is an effective mechanism in bringing policy issues to the forefront of American discourse. This includes elections or other national movements such as the movement against police brutality and women's rights. Hip Hop culture is an incredibly nuanced arena and my goal is to highlight some of the areas that often are not talked about in academia and how by listening to underrepresented communities, we can alleviate some of the issues that plague America today.

Abstract Code: O55

Presentation Type: Oral Presentation

Presenter(s): Welbec (Bill) Hamm

Faculty Mentor(s): Kelly Branam Macauley

Husky Compact Dimension: Seek and Apply Knowledge

Title: Observing "Minnesota Nice" at rural County Fairs in Minnesota

Abstract:
Abstract: Observing “Minnesota Nice” at rural County Fairs in Minnesota.W. D. (Bill) HammAnthropology 470 Anthropological Analysis and Interpretation St. Cloud University This paper seeks to examine the elusive entity we call “Minnesota Nice” through seven rural county fairs. I will use, among other sources, the seven defining characteristics of this phenomenon described by Bonnema and Veldof’s 2014 book called appropriately, “Minnesota Nice.” This text is suitable to examine this concept but clearly fails to examine this phenomenon across the racial divide. I have explored other sources to accomplish that interpretation.The primary research method for this study was participant observation at DFL (Democrat Farmer Labor Party) booths at these rural county fairs. I analyze both personal conversations with the people I served with in these booths, as well as conversations with citizens who came to speak with those of us at these booths. I look at not only what was said in these conversations, but also at what was consistently missing and not spoken about. The decisions of what to include and not include from fieldnotes has been an ongoing learning process that has changed as understandings have evolved, a true learning experience.I believe that the data could potentially show a strong connection between DFL political behavior at these fair booths and the fundamentals of “Minnesota Nice.” I also argue that the interaction between groups like the DFL, the GOP, and the 4H could demonstrate how the characteristics of “Minnesota Nice” continue to be perpetuated.

Abstract Code: O56

Presentation Type: Oral Presentation

Presenter(s): James Serkland

Faculty Mentor(s): Paul Neiman

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: The Ethics of Deportation

Abstract:
For this project I will do a thorough investigation of the moral justification behind deportation. I will explain what other philosophers, such as Jose Mendoza, have written on the subject. After doing the research I will share my own understanding and opinion of the findings. I hope to illustrate the ideas found by providing quality theoretical examples to demonstrate them. Then I will contrast and draw support for those examples by looking at real life scenarios of how deportation has been conducted in the United States as well as other nations. Finally I will provide my own argument on whether or not there is any moral justification for deportation.

Abstract Code: O57

Presentation Type: Oral Presentation

Presenter(s): Christopher Vadner

Faculty Mentor(s): Paul Neiman

Husky Compact Dimension: Think Creatively and Critically

Title: The democratic case for open borders

Abstract:
This project will address the problem of whether or not states should take an open borders approach towards immigration. The positions of two philosophers will be examined, those of Christopher Heath Wellman and Arash Abizadeh. On the one hand, Abizadeh believes that states do not have a right to restrict migration to the degree that they currently do. In other words, he believes that borders should become much more open. He claims that liberal democratic states cannot live up to their principles while at the same time taking coercive steps to keep out immigrants. Abizadeh thinks that both foreigners and citizens have a right of democratic say over the policies that affect them, including immigration policy. On the other hand, Wellman argues that we do have a right to regulate migration even to the point of rejecting refugees from entering the boundaries of the state. Wellman comes to this belief on the grounds that, like people, states have a right to freedom of association. In this view, a state cannot be said to be self-determining, or sovereign, if it does not have control over its borders. I will argue that Abizadeh's argument for more open borders holds up to criticism by Wellman and is the best approach to immigration policy.

Abstract Code: O58

Presentation Type: Oral Presentation

Presenter(s): Joey Streeter

Faculty Mentor(s): Paul Neiman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Flourishing Life vs. Immigration

Abstract:
Everyone deserves to live a good and flourishing life, this idea provides a strong justification for fewer restrictions on immigration, and possibly open borders. In this paper, I define what is required for a flourishing life and argue that this definition justifies a right to immigrate. I examine Christopher Wellman's and David Miller's arguments against open borders and against more open immigration and show why these arguments are wrong. I will also reply to any objections to my argument.I came up with this topic because I believe that people should be able to live their lives to the fullest and flourish as people. I expect the result to be that other people agree with my argument. This argument is important to investigate because of the current situations happening in the United States and all over the world about immigration. This project will change over time once the class talks about philosophers in favor of open borders.

Abstract Code: O59

Presentation Type: Oral Presentation

Presenter(s): Blaze McCoy, Irfan Chowdhury, Hunter Hillestad

Faculty Mentor(s): Matthew Vorell

Husky Compact Dimension: Think Creatively and Critically

Title: The Litter Box: Progressively Redesigned

Abstract:
In the beginning of the semester our class was asked to redesign/create a product for the benefit of a target market. We chose the litter box. We redesigned the litter box by adding two chambers and using pine litter. Pine litter is a byproduct from sawmills. And our redesign of the litter box was based around the different litter. We wanted to create a product that was easy to use and didn't require the user to bend down to scoop the fecal matter from their pets. As well, we wanted to switch from wasteful conventional litter to pine litter, pine litter is a recyclable material and a secondary product from production in sawmills, it's an efficient way to use all the scraps from a tree. Function: Our solution was simple and necessary. It required making two chambers for the box, and the chambers are separated by a sieve. The top chamber holds the larger sized pine pellets and feces. This chamber can be separated from the box by a handle and easily dumped. The second chamber holds the urine and has a "pee pad" at the bottom to prevent moisture buildup and bacterial grow. These two chambers were necessary. The dry and wet state of pine litter reacts inversely from conventional litter. Whereas clay litter clumps and molds with moisture, pine litter dissolves from pellets to sawdust. This is why our two chambers work perfectly with this type of litter. Solids stay on top and liquids go through the sieve system into the second chamber and are easily separated. We think this litter box meats the specifications for the pine litter that we hope more people will want to start using.

Abstract Code: O60

Presentation Type: Oral Presentation

Presenter(s): Breck Weber, Erica Anderson, Abol Barnaba, Paige Boman, Brittney Clark, Nancy Dolo, Amanda Fahrendorff, Matthew Hernandez, Elaina Junes, Nia Kline, Gretchen Olsen, Brianna Pace, Owen Riley, Cole Schoon, Paige Underhill, Kong Vang

Faculty Mentor(s): Sandrine Zerbib

Husky Compact Dimension: Seek and Apply Knowledge

Title: Applying knowledge in social research: SOC 303 students share their SCSU student survey results

Abstract:
The 2020 spring student survey, conducted by SCSU students between February 17 and February 25th, was designed to gauge at SCSU students' opinions on a variety of social and political issues that, for the most part, impact them directly in their everyday life. A little more than half of the presenters participated in data collection. All presenters had access to the data collected by students enrolled in Sociology and Political classes. Today, students present their results in correlation with gender, class standing, age, race/ethnicity and other demographic variables. The themes explored in this spring student survey include: general sense about SCSU, safety on campus, attitudes towards immigrants and immigration policies, opinions about climate change, feeling of belonging at SCSU, and other social issues. Students apply their newly acquired knowledge of social surveys and computer analysis skills to present their results.

Abstract Code: O61

Presentation Type: Oral Presentation

Presenter(s): Curan Hansen, Smita Khobragade, Lily Chamerski, Margaret Oliver, Briita Kinnunen, Sydney Breden, Jonathan Z Wong, Kyle Janssen, Alamea Matonich, Ansai Fatou BioSawe

Faculty Mentor(s): Sandrine Zerbib, Jim Cottrill, Ann Finan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Unleashed Opinions: SCSU 2020 student spring survey results

Abstract:
The 2020 spring student survey, conducted by SCSU students between February 17 and February 24th, was designed to gauge at SCSU students' opinions on a variety of social and political issues that, for the most part, impact them directly in their everyday life. The presenters created the survey questionnaire and supervised telephone survey shifts in their role as student directors and lead student directors. For each substantial question they designed, they present their results in correlation with gender, class status, age, race/ethnicity and other demographic variables. Some of the results in this survey can be compared to other SCSU survey findings from previous years in which similar questions were asked, but can also be compared to other opinion polls' results. The themes explored in this spring student survey include: general sense about SCSU, safety on and off campus, students feeling of belonging, president's performance, stress, attitudes towards immigrants and immigration, opinions regarding climate change, voting choices, and other social issues. We see our goal as the ability to provide empirical ground for reflection within our community, as well as potential improvements made within our academic institution.

Abstract Code: O62

Presentation Type: Oral Presentation

Presenter(s): James Nibbe

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Think Creatively and Critically

Title: Implementing GMP Reductase to Model the Enzyme Kinetics of ToyH Involved in the Purine Salvage Pathway

Abstract:
Toyocamycin is a pyrrolopyrimidine nucleoside which is primarily synthesized as a product of the purine salvage pathway commonly found in various bacteria such as Streptomyces rimosus. Ever since it's discovery in 1956, toyocamycin is known for its effect on biological systems due to its antineoplastic, antimetabolite, antifungal, antiviral, and antibiotic properties. Toy H is an enzyme that catalyzes an intermediate reaction in the biosynthesis of toyocamycin, which facilitates the formation of a pyrrolopyrimidine nucleoside intermediate from a purine derivative. The function of Toy H is similar to the phosphoribosyltransferase observed in the purine salvage pathway. Previous studies have attempted, with limited success, to model the kinetic parameters of Toy H's reactivity using a variety of techniques such as HPLC. This study will strive to effectively model the reaction kinetics of Toy H using a secondary reaction that treats Toy H's activity as the rate limiting step. Since Toy H has been shown to produce a nucleoside similar to guanine, GMP reductase was chosen to catalyze the secondary reaction. As GMP reductase catalyzes the modification of the chemical products of Toy H, it converts NADPH to NADP+ which allows for a continuous UV-vis spectrophotometry determination of the rate of the reaction. This attempted to determine Toy H's rate constant. Determining the kinetic parameters and chemical reactivity of the enzymes involved in the purine salvage pathway will help elucidate the chemical mechanisms of the enzymes, which can potentially result in the future synthesis of more customizable antibiotics to aid in the fight of mutating diseases.

Abstract Code: O63

Presentation Type: Oral Presentation

Presenter(s): Nihmotullahi Adesalu

Faculty Mentor(s): Nathan Bruender, Michael Dvorak

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: West African Traditional Medicine: A Gateway to Further Biochemical Insight of Diabetes (A Literature Review)

Abstract:
Traditional medicine is a common practice for most people in Western Africa; an essential part of culture that has been passed down from generation to generation. Some common practices of herbal medicine are seen in day to day home remedies such as honey during an ulcer crisis, or mixing ginger, garlic and honey to cure a cold, and pairing these with lemon grass tea . In biochemistry, extensive research is still being conducted on major metabolic pathways; like glycolysis, citric acid cycle - the enzymes, co-factors and compounds that allow said pathways to function effectively. The aforementioned remedies and more make use of plants and herbs that are known to contain bioactive compounds which play a role in various molecular pathways thereby attributing various characteristics like anti-inflammatory, anti-oxidant, anti-diabetic and so on to mentioned recipes. This review specifically brings the best of both worlds to gain further insight to the mechanisms and mannerisms of our body as well as the role of some herbs and plants in the prevention and management of Diabetes mellitus and a greater appreciation for West African culture through the analysis of previous research conducted on selected plants common to the region that have been used as a remedy for one ailment or the other. The crossover between biochemistry and traditional medicine is a significant topic to review because for many cultures these herbal mixtures are just an addition to their daily schedule, to biochemists those mixtures, powders and pastes contain a synchronization of active ingredients some of which might be essential to whichever question is at hand. A better understanding of the complexities that exist in these plants will allow us to further ask questions that will be of great value when looked at from a global health perspective. Further research could employ a multi-disciplinary approach in order to bring various aspects of fields such as biochemistry, medicinal chemistry, pharmacognosy, physiology and anthropology together all for a simple goal of understanding the why, the how and the what next .

Abstract Code: O64

Presentation Type: Oral Presentation

Presenter(s): Madeline Lundblad

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Evolutionary Roots of Hypoxanthine-Guanine-Xanthine Phosphoribosyltransferase

Abstract:
Nucleotide metabolism is a way for cells to replicate DNA needed in order to perform the tasks necessary for normal cell function. To do this the cell has two options in nucleotide metabolism, either the de novo pathway or the salvage pathway. The de novo pathway consists of creating the nucleotide from simpler molecules over several steps and consuming many units of energy. The other options for cells is the salvage pathway, which takes a discarded nucleotide and a molecule of phosphoribosyl pyrophosphate PPRT and creates the desired nucleotide and pyrophosphate in a single step. In this research, a specific enzyme that has been proposed to be involved in the purine salvage pathway is being analyzed. This enzyme is called hypoxanthine-guanine-xanthine phosphoribosyl transferase (HGXPRT). This research was conducted by using a plasmid to help express the HGXPRT gene found in the bacteria Streptomyces rimosus. This protein was purified and examined through the use of discontinuous kinetic assays using data from spectra collected on the HPLC. The enzyme activity was then measured by utilizing Michaelis-Menten kinetics on the data collected. Information gathered from the kinetics portion of our experiment will then be used to compare with other enzymes present in the enzyme superfamily to determine the evolutionary origin of HGXPRT. Studying enzymes like HGXPRT and its family enzymes can lead the scientific community to a greater understanding of how the enzymes evolved from their primordial ancestor, therefore leading to a greater understanding of its function. An increased understanding of their functions will help the researchers understand mutations in this superfamily of enzymes, such as the HGXPRT mutation that can lead to Lesch-Nyhan disease. This research will hopefully contribute to the fight against bacteria's ever evolving antibiotic resistance.

Abstract Code: O65

Presentation Type: Oral Presentation

Presenter(s): Eric Peters

Faculty Mentor(s): Christina Cama

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Study of the Synthesis of Copper Iron Pyrophosphate

Abstract:
In common day batteries, the lithium ion battery is the most widely used battery. Copper iron pyrophosphate (CuFe2(P2O7)2) has unique advantages in the use of lithium ion batteries as a replacement for the commonly used graphite electrodes. In batteries, energy is stored through the transfer of ions and electrons. Graphite has an accepted capacity of 350 mAh g-1 and copper iron pyrophosphate has a theoretical capacity of 567.62 mAh g-1. The increase of capacity shows that CuFe2(P2O7)2 promises a greater storage capacity than graphite materials. Additionally, this material promises an increase in electronic conductivity during battery operation. This presentation summarizes efforts to synthesize pure-phase CuFe2(P2O7)2. Following synthesis, the precipitate is heated under various conditions to crystallize samples and obtain phase purity. Sample compositions were identified using X-ray diffraction. XRD analysis reveals that iron phosphate was synthesized, possibly doped with copper, but copper iron pyrophosphate was not successfully synthesized.

Abstract Code: O66

Presentation Type: Oral Presentation

Presenter(s): Natalie Bartell

Faculty Mentor(s): Christina Cama

Husky Compact Dimension: Think Creatively and Critically

Title: The Synthesis and Analysis of Calcium Manganese(IV) Oxide Nanoparticles

Abstract:
Alternatives to lithium ion batteries are becoming increasingly sought after. The process of creating one such alternative, calcium manganese(IV) oxide nanoparticles, is tested by using solid-state synthesis. The crystal size, chemical composition, and yield of these nanoparticles is analyzed while two variables, furnace temperature and base concentration, are manipulated. To synthesize calcium manganese(IV) oxide, calcium nitrate tetrahydrate and manganese nitrate tetrahydrate are combined with sodium hydroxide. The mixture is allowed to sit without stirring for fifteen minutes as a top-layer forms. This solid is then filtered using vacuum filtration and placed in a 1100â„ƒ box furnace to burn and crystallize. A main finding discovered was that the time spent in the box furnace was not an influencer on the chemical composition. The amount of CaMnO2.95 composition as determined by x-ray diffraction was nearly the same for each sample. It would be beneficial to examine the chemical composition of calcium manganese(IV) oxide nanoparticles over differing conditions, such as changing furnace temperature and moles of reagents, to see if the purity could be increased. The purity of the sample would be tested using x-ray diffraction; the software highlights the desired product, CaMnO2.95, and impurities (such as CaMn2O4) in the form of intensity peaks.

Abstract Code: O67

Presentation Type: Oral Presentation

Presenter(s): Desirae Rasmussen

Faculty Mentor(s): Christina Cama

Husky Compact Dimension: Seek and Apply Knowledge

Title: Senior Thesis Presentation - Synthesis and Characterization of Hentschelite

Abstract:
Presentation of my Senior Thesis which is on the Synthesis and Characterization of Hentschelite for potential use as an electrode in a battery. Batteries are a critical part of a vast variety of industries, proving that the need for sufficient and dependable energy storage is essential. Modern day batteries are utilized in many day-to-day activities and provide energy supply and storage to objects such as cellphones, pacemakers, and even electronic cars. Within the battery, a chemical reaction in the electrode produces chemical energy that is converted into electrical energy, meaning that an electrochemical reaction is taking place through the means of oxidation and reduction processes. The lazulite mineral, Hentschelite (CuFe2(PO4)2(OH) ¬2¬¬),is a potential anode material for lithium-ion batteries due to its capacity range, promising voltage, and conductivity. Hentschelite promises a capacity of 530 mAh/g, whereas graphite promises capacities of 350 mAh/g. Hentschelite is synthesized through an aqueous precipitation reaction between copper nitrate, iron nitrate, and ammonium dibasic under basic conditions. Then, the precipitate is collected and calcined under various conditions to obtain the crystalline material. Phase composition was confirmed using X-ray Diffraction (XRD) and Scanning Electron Microscopy (SEM).

Abstract Code: O68

Presentation Type: Oral Presentation

Presenter(s): Eric Jensen

Faculty Mentor(s): Christina Cama

Husky Compact Dimension: Think Creatively and Critically

Title: Synthesis of Calcium Manganate from Metal Nitrates by Co-Precipitation

Abstract:
Calcium manganate holds potential as a rechargeable battery cathode material. An efficient synthesis route for production of this material was sought using calcium nitrate tetrahydrate, manganese nitrate tetrahydrate, and ammonium bicarbonate. The synthesis route used resulted in approximately 88% average yield of the desired product after heating the precipitate at temperatures as low as 1173 K. The calcined product was characterized via x-ray diffraction, matching literature peaks for $CaMnO_{2.95}$.

Abstract Code: O69

Presentation Type: Oral Presentation

Presenter(s): Beatrice Lenss

Faculty Mentor(s): Michael Dvorak, Rodney Tigaa

Husky Compact Dimension: Think Creatively and Critically

Title: Synthesis and Characterization of Lanthanide-3-Thiophene Acetic Acid Complexes

Abstract:
Trivalent lanthanides, Ln(III), exhibit desirable emission luminescence properties including narrow linewidths, high quantum yields, and long-lived lifetimes that make these Ln(III) desirable for applications such as labeling and tracing, sources of light, and optical sensors. Herein we coordinate various Ln(III) ions with ligands in an attempt to increase the efficiency of the luminescence emission properties via the 'antenna effect.' Eu(DPA)3 and Tb(DPA)3 standards were synthesized followed by Eu(3-Th)4 (3-thiophene acetic acid) and Tb(3-Th)4 samples. The thiophene derivatives were chosen due to their high molar extinction coefficients. Aqueous solutions of Ln(III)-DPA (pyridine-2,6-dicarboxylates) complexes will be used as secondary standards to determine quantum yields of our newly prepared Ln(III)-(3-Th) complexes. Various spectroscopic data will be collected using a combination of UV-Vis absorption, fluorescence and phosphorescence techniques. These efforts will be used to determine if 3-thiophene acetic acid increases the efficiency of the luminescence properties of the Ln(III) ions.

Abstract Code: O70

Presentation Type: Oral Presentation

Presenter(s): Yimleng Xiong

Faculty Mentor(s): Michael Dvorak

Husky Compact Dimension: Think Creatively and Critically

Title: Inhibition of Acetytlcholinesterasee

Abstract:
The summary of my project is to give an oral presentation of a literature review that I did for my Senior Thesis. The main focus of the project was the inhibition of the enzyme phosphodiesterase. I will give background information on the enzyme and other relevant background. I will then talk about the negative effects of inhibiting the enzyme by the neurotoxin sarin, and soman, and the mechanisms of how it is inhibited by these two neurotoxins. After, I would describe the treatments available to combat these two, but to also talk about a certain mechanism that makes the available treatment ineffective. I would then talk about the positive effects of inhibiting the enzyme when relating to beta-amyloid plaque formations. A lot would relate to Alzheimer Disease, and how the medication that is here now, and what the future experiments might indicate by creating more chemicals that will inhibit the enzyme. I would them sum up about my review and give my personal opinion.

Abstract Code: O71

Presentation Type: Oral Presentation

Presenter(s): Pearl Papenfuss, Bigyan Lama Thing

Faculty Mentor(s): Bruce Jacobson

Husky Compact Dimension: Think Creatively and Critically

Title: Chemistry Escape Room Re-Design

Abstract:
In the fall of 2018 Drs. Bruender and Jacobson created an "Escape Room" experience for their Biochemistry I (CHEM 480) students. The student response to the experience was overwhelmingly positive and the activity proved to be a unique method to assess student learning, worthy of further development with broader implementation. The proposed project goals include improving the mechanics and interface of the student experience that is presently implemented as D2L quizzes. We want to present the content and deliver valuable knowledge that students will be able to acquire, engage and recall through the whole process. So, the design will focus on the trend that appeals and motivates students to learn, rather than a course that is too simplistic or too challenging. This will be done by creating a consistent theme to the artwork and develop a way to make a immersive experience. The objectives are to improve the mechanics and refine the presentation of the CHEM 480 Escape Room student experience initially implemented as D2L quizzes by translating the activity to a more user-engaging interface created with Adobe Captivate. By achieving these objectives we will create a more engaging interface and more opportunities for students to become more active in learning thus reaching our goal.

Abstract Code: O72

Presentation Type: Oral Presentation

Presenter(s): Rostand Kom Tchuente

Faculty Mentor(s): Bruce Jacobson

Husky Compact Dimension: Think Creatively and Critically

Title: Malaria: Drugs, Challenges and Prevention (A Literature Review)

Abstract:
Malaria is a deadly disease that has been surviving throughout the years in tropical regions of Africa, Asia, and the Americas, Children being the main casualties. Finding a cure to the disease has always been a challenge due to the capacity of the pathogen to develop resistance to drugs. Because of the continuous need of new drugs against malaria, This presentation is a systematic analysis a few recently published peer-reviewed journal articles that focus on understanding the chemical and biochemical acting mechanism of antimalarial drugs, finding new cures to the disease and possible vaccines. With this presentation the audience will have a better, deeper understanding of how anti-malarial drugs work and why these drugs have increasingly become ineffective.

Abstract Code: O73

Presentation Type: Oral Presentation

Presenter(s): John Kennedy

Faculty Mentor(s): Mark Mechelke

Husky Compact Dimension: Think Creatively and Critically

Title: 2-oxo-14-(3-methoxyphenyl)tetradecane

Abstract:
Recent changes to the curriculum for ACS chemistry degrees are set for fall semester 2020. The changes include removing the requirement for undergraduate research; instead chemistry majors will be offered options between a handful of lab-intensive upper level chemistry courses. For students who still wish to perform undergraduate research with a professor, the option remains. The new lab-intensive classes include an organic chemistry class titled Organic Mechanisms and Synthesis. The lab directs students to perform total synthesis of bioactive natural product analogues. The first synthetic scheme outlines the syntheses of anti-tuberculosis agent analogues. Students would be responsible to complete each step within the standard three-hour laboratory window, and to find time to characterize the product using GC-MS and NMR outside of lab. To determine the viability of the synthetic sequence by undergraduate students, the total synthesis of 14-(3-methoxybenzene)-2-tetradecanone was performed over eight steps. The overall yield for the synthesis was 3.4%. The low synthetic yield is attributed to back-to-back steps followed by column chromatography. An Ylide preparation and Wittig reaction step, followed by a Silyl deprotection, the two steps combined had a yield of 11.2%. The next lowest yield was 65%, as such the workups for the two previous steps could be refined, as the overall yield of the synthesis was hindered. The reactions in the synthesis are reasonable for junior and senior level chemistry students to perform independently while the short sequence of the allows for students to experience a serialized laboratory with the possibility of restarting if a step fails. The proposed lab provides experience in organic reactions and techniques for students who are interested in organic chemistry and are looking to get hands-on experience with synthesis and characterization.

Abstract Code: O74

Presentation Type: Oral Presentation

Presenter(s): Mia Giorgi

Faculty Mentor(s): Mark Mechelke

Husky Compact Dimension: Seek and Apply Knowledge

Title: Natural Product Synthesis Derived from Piper Sanctum

Abstract:
The goal of this research is to synthesize a natural product of the plant, Piper Sanctum. This plant is abundant in south-central Mexico. The leaves are brewed as a tea and used to treat stomach cramps, coughs, bronchitis, asthma, and colds. Bioassay results illustrate that compounds in the leaves exhibit bioactivity against Mycobacterium tuberculosis, the bacteria responsible for causing tuberculosis. This research focuses on the eight-step synthesis of one of these bioactive compounds. 1,12-dodecanediol is the starting material for the synthesis. In the first step, the diol is mono-brominated, avoiding the undesired di-bromination product. After the remaining alcohol is protected, the third step of the sequence is a Wittig reaction. The mono-brominated product is converted into an ylide and treated with the commercially available aldehyde, piperonal. The resulting product is then deprotected and hydrogenated. The final steps of the sequence include an oxidation, a Grignard reaction, and an attempted green oxidation in the last step. Each step is characterized by either gas chromatography-mass spectrometry (GC-MS), nuclear magnetic resonance spectroscopy (NMR), or thin-layer chromatography (TLC). It is anticipated that this sequence will be implemented in an advanced organic chemistry laboratory at St. Cloud State University. The reactions can all be completed in less than three hours, the reactions are safe and inexpensive, and the products are very pure, which is important for replication in an academic laboratory setting.

Abstract Code: O75

Presentation Type: Oral Presentation

Presenter(s): Emily Bettinger

Faculty Mentor(s): Mark Mechelke, Michael Dvorak

Husky Compact Dimension: Seek and Apply Knowledge

Title: Synthetic Analogues of the Plant Piper sanctum as Potential Treatments for Tuberculosis

Abstract:
Piper sanctum, a plant found in Mexico, is used traditionally in teas and foods to help with respiratory sicknesses. Scientists have found that a specific compound in this plant, 2-oxo-14-(3',4'-methylenedioxyphenyl)tetradecane, boasts bioactivity against the bacteria that causes tuberculosis, Mycobacterium tuberculosis. An eight-step synthetic sequence was developed to prepare an analogue of the active compound found in Piper sanctum. The starting materials for the synthesis were the commercially available compounds para-methoxybenzaldehyde and 1,12-dodecanediol. Reactions performed included a monobromination, silyl protection, Wittig reaction, silyl deprotection, hydrogenation, pyridium dichromate oxidation, and Grignard reaction. The desired para-methoxybenzaldehyde analogue was successfully synthesized, purified, and characterized by 1H NMR, 13C NMR, and GC-MS. This synthetic analogue could potentially exhibit more potent activity and combat unforeseen side effects of the natural product. This sequence was in part developed as a potential advanced organic laboratory for undergraduate students to gain experience with running, purifying, and characterizing a variety of organic reactions.

Abstract Code: O76

Presentation Type: Oral Presentation

Presenter(s): Nathaniel Pfeiffer

Faculty Mentor(s): James Poole

Husky Compact Dimension: Seek and Apply Knowledge

Title: Selectivity of Hydroxyl Radical Reactions on Polycyclic Aromatic Hydrocarbons (PAHs) in Organic Solvents.

Abstract:
Hydroxyl Radicals are members of a group of compounds known as reactive oxygen species (ROS). These compounds are of particular interest as they pertain to their impacts on environmental and biological processes. One specific area of importance is that of polycyclic aromatic hydrocarbons (PAHs), byproducts of burning many fossil fuels. Hydroxyl radicals can be used to eliminate these pollutants, which can often remain present in soil for long periods of time. The hydroxyl radical adds to the PAHs to produce alcohols. The ring structures have multiple sites to which the hydroxyl can add, thus it can be expected that there will be multiple products formed for each reaction. This study looks to provide an insight as to the products produced during hydroxyl attack on PAHs in organic environments. PAHs of interest are stilbene, styrene, and naphthalene. Acetone hydrazine was used as the source for the hydroxyl radical, and TEMPO as a trap for leftover radicals. NMR and GC-MS are used to characterize PAH/hydroxyl products and determine selectivity ratios.

Abstract Code: O77

Presentation Type: Oral Presentation

Presenter(s): Elatia Zaffke

Faculty Mentor(s): John Sinko

Husky Compact Dimension: Seek and Apply Knowledge

Title: Laboratory Simulated Supernova Shock Waves

Abstract:
The goal of this project is to simulate one of these explosions on a small scale, in order to study the resultant shock waves and their effects upon dust in the interstellar medium. This research can improve the understanding of the impact these explosions have on the formation of solar systems and the composition of the interstellar medium itself. In order to simulate this type of event, two electrodes were fashioned from sputter-coated aluminum and affixed within a scientific vacuum chamber. The vacuum chamber was pumped down, then re-pressurized, with pure argon gas. A 13.56 MHz radio frequency argon plasma was sparked and maintained using a 20 Watt RF generator and matching network. Dust with a chemical composition similar to interstellar dust (e.g., coronene and silicon carbide) will be introduced into the plasma and a pulsed Nd:YAG laser will be used to spark a detonation. Shock wave pressure will be measured using a piezoelectric pressure sensor. A high-speed camera will record shock wave motion, at up to 200,000 frames per second, via schlieren imaging. The chemical composition and physical conformation of the dust particles will be measured before and after the test, using a scanning electron microscope, to determine if the explosion affected the size or composition of the particles.

Abstract Code: O78

Presentation Type: Oral Presentation

Presenter(s): Kavindhi Wijesekara

Faculty Mentor(s): Kannan Sivaprakasam

Husky Compact Dimension: Seek and Apply Knowledge

Title: Expression, Purification and Characterization of cyclohexadienyl dehydrogenase and pyrroline-5-carboxylate reductase from Sinorhizobium meliloti

Abstract:
The study conducts on two enzymes Cyclohexadienyl dehydrogenase and pyrroline -5-carboxylate reductase from the bacterium species Sinorhizobium melilot. These fragmented plasmids of these enzymes received from the New York structural Genomics research collaboration were subjected to be expressed, purified and find Kinetic parameters of Km, Vmax, kcat. The significance of this study is the Kinetic characterization of the wild-type enzyme and it provides a foundation for assessing mutants that investigate structure and function. Though the expression and purification have been already found for both enzymes, the X-ray structure for cyclohexadienyl dehydrogenase is already determined. There is no structure or kinetic data published for pyrroline-5-carboxylate reductase. Chemical agents were used for the Growth media and for antibiotics. Also, IPTG was used for Expression, Ni agarose was used for Purification and, kinetic characterization was done on NAD, NADH, tyrosine, arogenate, proline, and pyrroline. Methods and procedures include the overexpression of the bacterium E.coli, Purification with Nickel, and spectrophotometry was used to determine the kinetic studies. Shaking incubators, Ni-Agarose columns and Cary Spectrophotometer were also used. All the Data collected throughout the experiment, were fundamental to determine the Kinetic characterization for the enzymes cyclohexadienyl dehydrogenase and pyrroline -5-carboxylate reductase. After interpreting the data to find the Kinetic parameters, it did help us to broaden the knowledge both theoretically and experimentally determine the structure of the pyrroline -5-carboxylate reductase.

Abstract Code: O79

Presentation Type: Oral Presentation

Presenter(s): Bibek Khadka, Swarnim Pradhan Ahmed M Bugshan, Michael Sorensen

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Fishing Emails and Calls

Abstract:
We are presenting about fishing emails and calls. We want to aware people about fishing scams which are mostly done through emails and calls. Many people fall for it easily since they don't know about. The fishing emails and calls mainly focuses people targeting on their weak point so we want to aware people about it.We would be using Power Point to present our presentation. Bibek Khadka would be presenting the slides. PresentersSwarnim PradhanBibek KhadkaNirdesh KarkiMichael SorensenAhmed BugshanContact Email: spradhan@go.stcloudstate.eduFaculty Mentor: Erich P RiceEmail: eprice@stcloudstate.eduDepartment: Information SystemsTime Needed: 8-10 minsTime Preference: 3.30 pm - 4.50 pm

Abstract Code: O80

Presentation Type: Oral Presentation

Presenter(s): Mohamed Al Makeerat, Ali Akram

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Communicate Effectively

Title: 'Are you yourself?'

Abstract:
A collection of vignettes in an against-cybercrime and cyberbullying social campaign. Each vignette showcases a scenario that could happen on a specific social media platform, and how it affects the state of wellbeing of the person involve; it ends with a potential solution to the dilemma. All vignettes end with the same statement 'Are you yourself?', as they are all connected to each other. It is an approach to address general issues of cyberbullying and cyberstalking, provoking a conversation about our digital identities and real-life identities and the difference between them.P.s. The name of the campaign may change, as well as the content, as it is in the creative process right now [still not shot].Group Members:MD Hannan HossainAbdulaziz AlduaijySkylar RychnerMohamed AlMakeeratAli AkramChowdhury Saad

Abstract Code: O81

Presentation Type: Oral Presentation

Presenter(s): Jake Lieser, Stacy Nelson, Troy Kluver, Jake Evensen, Adounola J Bohiki, Anna Ndri, Ouede Louan

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Ransomeware Aware and Demonstration

Abstract:
Our project is going to be about ransomware. We are going to define what ransomware is and show multiple examples of how to be aware of ransomware attacks by showcasing fun and interactive presentation slides while also giving a demonstration of a live attack. We will dive into the different areas of ransomware and show some history of previous attacks and also the dangers that surround ransomware. We will have 7 presenters so we will have to each get some words in for the time that we are allotted. Ransomware can be put onto someones computer or device in several different ways, so we will also describe the different ways that ransomware can be put onto someone's device. On top of this, we will also showcase the different ways on protecting yourself from a ransomware attack. If you were to get hit by a ransomware attack our team will also provide you with effective ways that you can either remove the ransomware from the device or take corrective measures to aid during the attack. Overall, The project will be an informative but yeah fun and engaging project that will be aimed at educating while also providing a fun showcase for viewers to learn about all of the threats that our out in the cyber world.

Abstract Code: O82

Presentation Type: Oral Presentation

Presenter(s): Cubie Shrestha, Siddhartha Shrestha, Sajjan Shrestha, Krishna Maharjan, Andrew Bennin, Nishant Kafley

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Seek and Apply Knowledge

Title: It's a trap, don't fall for it!

Abstract:
The world today sits on the fingertip of every individual as everything is just one touch away. The technology that we play has played us back with a two-faced game; it gives us the feeling of divine knowledge and power over existing things, but it has also made us as dumb as a post.The purpose of this project is to look back into our basic understanding of security awareness, red flags, do's and don'ts on the web and talk about simple but very frequent internet threats. We aim to touch base on the most common internet threats like phishing, fake websites, ransomware, inappropriate data collection and their usage. We will be introducing each threat, their purpose, common targets, loopholes, weak spots and, also talk about their present status and prevalence on the web.This project is a platform where we want to give out as much information and tips to prevent ourselves from being the victims of the internet. We aspire to guide our audience with signs and signals that they should be looking for while using the web in order to protect them from any kind of digital attack. Like the web link, each title is connected and is just the door waiting to be explored. We intend to delve a tiny bit of possibility and see who follows through.

Abstract Code: O83

Presentation Type: Oral Presentation

Presenter(s): Bandana Byanjankar, Sunny Chawla, Sohail Alam, Shyam Katuwal, Shiva Subedi, Ipran Shrestha

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: IT Security Awareness: An Overview

Abstract:
We the students from IS 371 (Policy Development and Security) are planning to do our project on IT Security Awareness.The technological world has developed and is in the process of developing every day. The technologies that were used in the '90s have been replaced by new and modern ones. Earlier, it would take days to send a simple letter from one part of the city to another. However, now it is a matter of a few minutes to send and receive emails all around the world. However, this technological boom has its' own pros and cons. It has obviously made our life much easier and faster to communicate. In the same way, it has also brought threats with them. We can read news of cyber-crimes occurring almost every day. Companies are facing threats such as Hacking, Pharming, Identity Theft, Ransomware, Spam, Phishing, Malware, etc. in their system. This brings a threat to the company and everyone associated with them. So, our group has decided to do a project on IT Security Awareness. There are various ways one can become a victim of cyber crimes, such as through phones, phony emails or links, unsafe downloading apps or software, etc. Our project will be based briefly on what are the Current threats, Attack red flags, Defensive procedures, and Threat reaction plans.

Abstract Code: O84

Presentation Type: Oral Presentation

Presenter(s): Ajar Shrestha, Shubhanjan Shah, Aksana Nepal, Ashutosh Pradhan, Shraddha Nakarmi

Faculty Mentor(s): Erich Rice

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Tax Fraud

Abstract:
On 27 January tax payers in the United States can start filing their taxes. This also means cyber criminals can kick off their tax fraud campaigns. Tax fraud is when cyber criminals pretend to be a certain individual and submit a tax refund in that individual's name. The IRS defines tax fraud as "when someone uses your stolen Social Security number to file a tax return claiming a fraudulent refund."

Abstract Code: O85

Presentation Type: Oral Presentation

Presenter(s): Susmita Kunwor

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Mobile Device Security

Abstract:
Mobile device security is the measure taken to protect sensitive data on mobile devices. It also helps to prevent unauthorized people from accessing users or company data by using mobile devices. Smartphones, laptops, tablets, are some examples of devices that require protection. Cybercriminals continue to hunt for ways to use vulnerabilities in apps, operating systems, and software's, trying to take advantage of security vulnerabilities before manufacturers find them and patch them. I have been doing research on Lookout mobile device security and Symantec mobile security. Also, what kind of features they each offer. I have been looking into what are the best security practices for mobile devices. Specifically on the IPhone 13.3.1 operating system. I have been researching on what kinds of mobile device security are out there recently and what types of protection they provide. I am planning to install Lookout mobile device security and Symantec mobile security to see how it works. Installation of both applications will be done and tried out on my Iphone 11 to see what each one does on my device. After the installation of both applications on the devices features of the mobile security tools will be tested to see what it provides. I will create some lists to see which software is the most useful and different vulnerabilities. I also want to do research on how to protect mobile devices from different kinds of threats and attacks.

Abstract Code: O86

Presentation Type: Oral Presentation

Presenter(s): Sebastian Borras

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Seek and Apply Knowledge

Title: Does It Pay To Pursue A Graduate Degree In Minnesota?

Abstract:
The cost of getting a masters or a doctoral degree can be really expensive, but many people agree that getting a higher education is worth it. According to an article called, “Do Benefits of College Still Out-weight the Costs?” most people see a larger benefit than cost by continuing their education after receiving a bachelors degree.The goal of this research project is to figure out if the benefits outweigh the costs spent on higher education overall. Studies show that employers are usually willing to pay a college premium wage for those who have a higher educational background. By cross referencing different universities in Minnesota such as St. Cloud State University, the University of Minnesota, and Mankato State University there will be a collective data base of information. By having this collective data, the different masters programs and doctoral programs offered at the various colleges will be separated into fields such as Business, Arts, Education, Engineering, etc. The data collected should prove that people with higher education receive better paying jobs and as a result end up earning more than they would if they did not pursue a masters or doctoral degree.

Abstract Code: O87

Presentation Type: Oral Presentation

Presenter(s): Connor Schmitz

Faculty Mentor(s): David Switzer, Patricia Hughes

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: An Economic Analysis of the Effects of Improved Water Sources in Developing Countries

Abstract:
The object of the study is to understand the impact of clean drinking water availability. Five million people die each year from diseases brought on by the lack of clean drinking water. Diarrheal disease is the leading cause of death when it comes to water-borne diseases. Deaths from diarrheal diseases are second to deaths from HIV/AIDS. My literature review has identified possible solutions to this crisis. The dilemma is finding solutions that are economically feasible. Educating high-risk communities of the effect of washing hands and other basic hygiene practices seems promising. I pulled data from ourworldindata.org, data.worldbank.org, and other sources. According to these sites, we have made significant progress overall in reducing deaths and the number of people in developing countries who do not have access to improved water sources as defined by the World Health Organization (WHO). The data shows significant reductions in water-borne illness once improved water sources are introduced to high-risk communities. Educating mothers on the impact hygiene has on child mortality is also an effective way to significantly lower risk. I chose this topic because deaths from unsafe water sources have dropped significantly in the last twenty years, but some countries have seen no change.The purpose of this research is to discover the most economically viable way to provide everyone in developing countries with improved water sources and lower deaths from all water-borne diseases.

Abstract Code: O88

Presentation Type: Oral Presentation

Presenter(s): Bishesh Karki

Faculty Mentor(s): Jieyu Wang

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: The Effect of Virtual Reality on College Enrollment and Retention

Abstract:
With public 4-year college enrollment decreased by 0.9% throughout the United States, St. Cloud State is dealing with a much larger decrease of 6.4% in 2019. Virtual reality touring and tools could affect the enrollment at St. Cloud State University. We researched into ways for effectively marketing the school and its tools to increase enrollment and retention. Virtual reality can make for an unrivaled unique experience for students interested in attending university. Although enrollment is currently down across the United States there is a sizable difference between the National average and St. Cloud State University's. One-way St. Cloud State could raise enrollment is to reach out to more students. From St. Cloud State's published enrollment data there is a head count of 1,863 new entering first year students. Out of that 1,863 there are 331 students who are non-resident to Minnesota. Information about a college and being able to tour and experience what the college can offer a student are some of the key aspects of a student's choice. This is one reason why the 82% of the new student headcount has Minnesota Resident Status. The more a student knows about a college the more likely that they are going to enroll into that University. Reaching out to the Non-Resident Minnesota students is basically an endless potential market possibility. The main issue with reaching out to Non-Resident students is getting enough information for them to think of St. Cloud State as a possibility. St. Cloud State University is a diverse school and reaches to out to students nationally and internationally as well. International students come from all over the world with some of the most notable enrollment numbers from Nepal, Saudi Arabia, and China with well over 200 students each. Getting enough information to students who are unable to directly visit St. Cloud State is tricky but important for influencing the student's decision.Technological innovations continue to impact digital marketing, and one of the most intriguing tools to enter the landscape in the past few years is virtual reality experiences that is delivered to the user. Virtual reality is a tool that offers an opportunity for content communication. It can help to build long lasting relationships with potential customers or in our case potential St. Cloud State students. Considering the situation where the target audience location is worldwide, giving an opportunity for customers at international school fairs to see the St. Cloud State life can create positive attitude about the school in the mind of "consumers".

Abstract Code: O89

Presentation Type: Oral Presentation

Presenter(s): Nathan Block

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Little Falls and the Big Picture

Abstract:
When most people thin about Little Falls, they think of a sleepy, isolated, small town. However, I will show how Little Falls has connections to world events, such as Charles Lindbergh growing up in Little falls, Little Falls World War II soldiers and units, and the lumber industry that fueled the towns growth. The legacy of Little Falls stretches farther than just the town itself, it was the home of the first person to fly across the ocean to Europe, soldiers who fought in WWII, lumberjacks who helped supply building materials throughout Minnesota.

Abstract Code: O90

Presentation Type: Oral Presentation

Presenter(s): Rose Johnson

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Diverse Ethnic Groups in St. Paul

Abstract:
Some people think of St. Paul as a city that is home to mainly white middle-class community. However, research shows that there are many other ethnic groups, other social classes, and diverse histories that also live in the city. The diverse group of people that live in St. Paul have impacted the city since before it was a city. My research shows deep complex relationships between various ethnic groups. Looking at sources from the late 1800's surrounding the German-Scandinavian-Irish immigration, the city changed quickly from the high volume of immigrants moving to the area. The new immigrants were thought of as untrustworthy and it caused many tensions between the already established citizens of St. Paul and the newly arrived immigrants. Through my presentation, I will give examples of how the ethnic groups and the complex relationships that they have between one another has impacted the city both in the past and the present.

Abstract Code: O91

Presentation Type: Oral Presentation

Presenter(s): Jinho Lee, Kyu Young Kyung

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: The relationship between infectious diseases(epidemic) and tourism

Abstract:
We are going to do our oral presentation with this topic which is the relationship between infectious diseases(epidemic) and tourism. The main point of our project is this. According to my research, the world is in the fear of the new corona virus which can be expose to infection by physical & non-physical contact (Wuhan corona). In the wake of this phenomenon, there is the serious impact on tourism industry. This research aims to know about how the pandemic spreads out through the tourism and the effects of pandemic to economy. The focus then turns to what kinds of pandemic was and how it affected to the whole world.Through the survey, we investigate if students are aware of the seriousness of the epidemic and what are the risks and disadvantages of travel.The questionnaire-based information shows that seriousness of the epidemic and risks that people can get.Thanks.

Abstract Code: O92

Presentation Type: Oral Presentation

Presenter(s): Sam Poppen

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Why Anoka is an Exciting County

Abstract:
The story of a place is not limited to who writes about the area. Anyone and all should be able to go and make their own notions about a place's history. A place is more than just buildings, but buildings are important to understand a people and how they operate. Another valuable part of a place's history is what they celebrate and what the place is famous for. Anoka county is a historically rich area of Minnesota. Most people know that Anoka is predominately homogeneous white. As the fourth most populated county in Minnesota. Anoka is still able to stand out from the other counties and make itself known. Anoka county has buildings that are still used from when the town originated. Anoka County is famous for its Halloween. Why are these two things important? The biggest Halloween celebration and its buildings are symbolic of Anoka's history and its people. The people of Anoka can provide a story that is not always shown in the buildings and celebrations. By emphasizing the buildings and the celebrations, a view of what the people value and want to portray. People that are first time visitors are then able to learn upon visiting Anoka that it has a rich history and is not just a town in Minnesota.

Abstract Code: O93

Presentation Type: Oral Presentation

Presenter(s): Cassie Brown, Rose Johnson

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: The Glories of St.Paul

Abstract:
When most people think about Minnesota, they are quick to showcase all they know about Minneapolis, and believe St.Paul is just in the background when it comes to the terms "Twin Cities". With my research I found new information of ways St.Paul is unique in it's own way and different from Minneapolis. During the civil war St.Paul played an important role in the underground railroad. The St.Paul Cathedral has its own unique history that seperates it from the churches in Minneapolis. Steamboats and the Mississippi river was a great ecomomy boost to St.Paul.

Abstract Code: O94

Presentation Type: Oral Presentation

Presenter(s): Austin Eastwood, Jacob Conover

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Quite Town with a Loud History

Abstract:
Many people think of Grand Marais as a quiet, charming, small town in northern Minnesota. A town that feels like it was pulled straight out of a Stephan King novel. An uneventful and quaint town, with its major claim to fame being its location, situated on Lake Superior. In truth, Grand Marais has a very rich cultural and historical background. Its relation to the Gunflint Trail connects it to natural artists from the mid-20th century, coming here for its natural beauty. Grand Marais also played a large part in the northern fur trade for multiple centuries. The misconceptions of Grand Marais being a small uneventful town forgets the rich history that unfolded in that very same place.

Abstract Code: O95

Presentation Type: Oral Presentation

Presenter(s): Jason Cussler, Kristina Loukusa

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
This compendium of projects will look at several immigration changes and impact in the U.S. from the lens of the immigrant community and the US-born community. The selection of topics will be diverse and will have as a common theme the economic implications of these migrations while also providing a historical context behind the migration pattern.

Abstract Code: O96

Presentation Type: Oral Presentation

Presenter(s): Anna Nelson, Hanna Mayhew

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
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Abstract Code: O97

Presentation Type: Oral Presentation

Presenter(s): Abdinur Muqtar, Abdullahi Bedel

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

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Abstract Code: O98

Presentation Type: Oral Presentation

Presenter(s): Chaska Whitehorse, Joshua Velasquez

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

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Abstract Code: O99

Presentation Type: Oral Presentation

Presenter(s): Betty Grell, Marylin Rodriguez

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
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Abstract Code: O100

Presentation Type: Oral Presentation

Presenter(s): Bryan Karp, Wyatt Primus

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
This compendium of projects will look at several immigration changes and impact in the U.S. from the lens of the immigrant community and the US-born community. The selection of topics will be diverse and will have as a common theme the economic implications of these migrations while also providing a historical context behind the migration pattern.

Abstract Code: O101

Presentation Type: Oral Presentation

Presenter(s): Samantha Bromenshenkel, Quintia Mabushi

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
This compendium of projects will look at several immigration changes and impact in the U.S. from the lens of the immigrant community and the US-born community. The selection of topics will be diverse and will have as a common theme the economic implications of these migrations while also providing a historical context behind the migration pattern.

Abstract Code: O102

Presentation Type: Oral Presentation

Presenter(s): Colton Leigh, Bol Ruach, Michael Walker

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
This compendium of projects will look at several immigration changes and impact in the U.S. from the lens of the immigrant community and the US-born community. The selection of topics will be diverse and will have as a common theme the economic implications of these migrations while also providing a historical context behind the migration pattern.

Abstract Code: O103

Presentation Type: Oral Presentation

Presenter(s): Edgard Mamani Vargas, Nathaniel Nemeth

Faculty Mentor(s): Monica Garcia-Perez

Husky Compact Dimension: Seek and Apply Knowledge

Title: On the economics of immigration: Exploring local, regional, and national issues on immigration and the economic implications

Abstract:
This compendium of projects will look at several immigration changes and impact in the U.S. from the lens of the immigrant community and the US-born community. The selection of topics will be diverse and will have as a common theme the economic implications of these migrations while also providing a historical context behind the migration pattern.

Abstract Code: O104

Presentation Type: Oral Presentation

Presenter(s): Madellen Schetnan

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Can Going Vegan Save the World?

Abstract:
In the project, I plan to research the economic, environmental, and social outcomes of animal agriculture. My goal is to provide research that points to suggest that a vegan lifestyle would benefit not only the environment but our health and the amount of money being spent on healthcare. By looking at research that has already been done, I hope to find new information to bring to the table and build off of what others have already found. When it comes to the environmental side of things, I plan on focusing on water usage, land usage, as well as greenhouse gas emissions pertaining to animal agriculture. I will also dive into water pollution as well as air pollution. On the health/social scale, I plan to compare different countries/states meat intake and their health outcomes. The top killers in the United States are all diet-related diseases/sicknesses, so finding a way to treat the top killers without medication is vastly important. On the economics side of things, I want to go into how much money is spent on health care when it comes to diet-induced deaths/sicknesses and how much money could be saved if we collectively went over to a plant-based diet. My overall intention is to educate the listeners on what they can do to fight climate change with diet change. I also hope to inspire listeners to take their health more seriously and explain how our health can impact our overall economy.

Abstract Code: O105

Presentation Type: Oral Presentation

Presenter(s): Steven Koestner

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Seek and Apply Knowledge

Title: Student loan debt and its effect on investment into retirement

Abstract:
Every year the amount of student loan debt within the country continues to increase. Looking at it currently, student loan debt sits at $1.64 trillion dollars as of quarter 4 2019. The increase in student debt can be attributed to two things. The first one is that more people are attending college now, when compared to previous generations. In 1970 8.5 million people were attending college, whereas in 2017 19.7 million people were attending college. The second factor for the rising debt is that college has become more expensive, just from the 1997-'98 school years to the 2018-'19 school years the cost increased 63% at 4-year public schools. There have been several studies on the subject and they have found that students who owe loans upon graduating have saved less for retirement at a given age compared to those who do not have student loans. There are two interesting things regarding this topic; when looking at other loans (like credit card debt and car loans), they don't seem to have an impact upon retirement investment and the size of the student loan does not matter. The studies done on this topic are using sources such as the NLSY for their data. They mainly focus upon the 1997 cohort and not the 1979 cohort. I want to see if this impact on retirement savings is a new phenomenon or if it is something that has been around for a while and is just becoming worse as student loan balances rise. To achieve this, I will use data on the 1979 cohort and perform a similar analysis.

Abstract Code: O106

Presentation Type: Oral Presentation

Presenter(s): Bryan Karp

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Cost of Going Green

Abstract:
This project is my economics senior research seminar paper that I will adjust into an oral presentation for the purposes of the Huskies Showcase. The subject of the project is how much does it cost to use renewable or clean energy sources as opposed to fossil fuels. As it is still early in the project, I have not yet nailed down specific information that I will be including in the project as it is still in its early stages. I do know that the project makes use of data from many different countries over many years. I potentially might include some specific U.S. data as well, depending on how the project progresses. As far as the content that I already began working on, I have data from almost every country on their total electricity production. I also have data as to what percentage each type of energy production method is responsible for in each country. The different types of electricity production methods include fossil fuels, nuclear, solar, wind, and hydroelectric power. I do not know if I will include geothermal power in this analysis because it is comparatively rarely used. I will use this data to make models that show how much each different type of electricity production costs. It might be difficult to quantify externalities such as pollution into the costs, but I will make my best effort to integrate those types of things into the project.

Abstract Code: O107

Presentation Type: Oral Presentation

Presenter(s): Bret Lee

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Seek and Apply Knowledge

Title: Determinants of MLB Attendance: Do Other Sports Teams Matter?

Abstract:
The goal of this research project is to determine whether if having multiple professional sporting events going at the same time affects attendance rates at other venues. Preliminary results have shown a negative correlation between number of professional sporting events and the link to attendance rates. This paper will focus on the last 5 years of Minnesota's four sports teams: The Minnesota Twins (Major League Baseball), Vikings (National League Football), Wild (National Hockey League), and Timberwolves (National Basketball Association). Based on observations, it was determined that having only a single year of data would not be sufficient and five years would be more appropriate. Over the last five years, the economy has been steady which allows the results to be nonbiased and true to consumers tastes and preferences. There is only one scenario where attendance records may be skewed. On December 12th, 2010 the Hubert H. Humphrey Metrodome collapsed because of heavy snow the night before. Due to the collapse, the Minnesota Vikings had to play at TCF Bank Stadium (home of the collegiate University of Minnesota Gophers men's football team) until the 2016 season. Since the objective is to find the last five years of data (2015-2019), the year 2015 will be use TCF Bank's stadium to measure attendance rates for the Minnesota Viking's home games that season.

Abstract Code: O108

Presentation Type: Oral Presentation

Presenter(s): Samantha King

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: Tourism and Terrorism, Connected More Than We Think

Abstract:
The tourism industry has been considered one of the most important aspects of the global economy. As such, the tourism industry has created the opportunity for countries to grow and prosper through an industry focused on service and the curiosities of people rather than on a specific material. However, in many of these countries, terrorism has created a negative image and scared off tourists and possible tourist focused businesses. A famous tourist attraction can turn into a highly avoided one due to terrorist attacks and activity which can be detrimental to a destination. The purpose of this paper is to highlight and examine the impact terrorism has on tourism around the globe. The primary research method used for the achievement of this paper is documentary research. This paper will attempt to show that the relationship between tourism and terrorism is connected on a deeper level than it would seem.

Abstract Code: O109

Presentation Type: Oral Presentation

Presenter(s): Rachel Michl

Faculty Mentor(s): Kelly Branam Macauley

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Reiki and Well-being in Minnesota

Abstract:
Reiki is an example of a holistic healing practice that can be used for the participants overall well-being. Well-being can be seen through mental, emotional, and physical forms with my participants. Some examples include the calming effect Reiki was said to have on my participants, and it's ability to help with pain, in my personal experience it reduced the irritation from my poison ivy and hives. Reiki can be described as a holistic energy healing that focusing on the moving of energy through the body to help realign or balance the recipients energy and help heal ailments. Previous research shows that Reiki and other forms of holistic healing have been used for well-being for a number of years. Julie Hahn, Patricia M. Reilly, & Teresa Buchanan discuss the use of Reiki is helping hospital patients deal with their pain and anxiety. Through the use of participant observation I was able to experience how and why Reiki is used and directly see it's influence on the recipients well being. Mark S. Rosenbaum, & Jane Van de Velde discuss their research and describe that Reiki is shown to have more of an effect on reducing pain in cancer patients compared to other methods such as massage and yoga. I argue that Reiki is used for the participants well being both mentally and physically in a formate that can reduce stress, anxiety, and pain as seen in Julie Hahn, Patricia M. Reilly, & Teresa Buchanan discussion of the use of Reiki is helping hospital patients deal with their pain and anxiety, and Mark S. Rosenbaum, & Jane Van de Velde discussion of pain reduction in cancer patients.

Abstract Code: O110

Presentation Type: Oral Presentation

Presenter(s): Caitlin Kantola

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Looking into Anoka

Abstract:
When most people hear of Anoka, they may most often think of it as the Halloween capital of the world or generally an isolated white community who is just a suburb of the Twin Cities. Though those preconceptions may have a certain truth to it, to an extent. Historical research, however, reveals that Anoka has a lot more to offer and does in fact have a more complex history and diversity of experiences within it. For example, Anoka has an extensive Dakota and Ojibwe background that is represented all throughout not only Anoka city, but Anoka County as well. The town of Anoka also has ties to logging in its history and that had a great impact in the beginnings of Anoka. During World War II many people represented Anoka through different war occupations. So, although Anoka is the Halloween capital of the world, there is also so much more to Anoka then that. In my Husky Showcase Presentation, I will be exploring more indepth what makes Anoka the vibrant community it is today by touching on its Native American past, logging history, immigrant communities, and important people in Anoka's history.

Abstract Code: O111

Presentation Type: Oral Presentation

Presenter(s): Brian Neumeister

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Diverse History of Duluth

Abstract:
When one asks the average person about Duluth the average person probably thinks of it as a town that is all white people with German, Finnish, Scandinavian etc. descent. This presentation will hopefully break this perspective and show that Duluth has a rich diverse history. Duluth is one of the most important cities in Minnesota. It was and is the farthest inland port that has access to the Atlantic via the Great Lake canals. In World War Two, Duluth was a vital lifeline of iron and other supplies for our troops and our valuable allies that helped defeat the German and Japanese war machine. The people that helped with this monumental task were of all races and creeds. This project however will also cover the tragic racial tensions that befell the city like the lynching of three men who were denied a trial in 1920. This presentation will also look at the group of people who lived in Duluth longer than Duluth existed, the Ojibwe. This project will show that while people of European descent made what Duluth is today so did people of all colors and creeds: Asians, Ojibwe, African Americans, Latino/Latinas all made what Duluth is today.

Abstract Code: O112

Presentation Type: Oral Presentation

Presenter(s): Kyle Larsen, Christian Noyes

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Think Creatively and Critically

Title: Duluth and the Modern World

Abstract:
When most people who are not well acquainted with the Twin Ports think of Duluth, Minnesota, the images that often come to mind are that of a town that was once an industry powerhouse that is now washed up and unable to match the commercial might of the Twin Cities. Disputably the farthest inland port in North America, situated at the extreme eastern tip of the largest freshwater lake in the world, Lake Superior, this presentation will challenge Duluth's image of being just a tourist attraction, a place where the only people who stay are retirees while the young flock to the Twin Cities in droves to attend college and look for work, a place where the only people who populate the vicinity are from Scandinavian or Polish decent and a place where the snow piles up and the wind is always "off the lake." This presentation will do just that by showing how Duluth, even today, contributes to the economy of the modern world, has some of the most esteemed colleges and Universities in the state, and though it is true that the Scandinavians, Polish, and other European Americans are densely populated in Duluth, the Ojibwe people were, and still are, a big part of the story of the land they call Onigamiising.

Abstract Code: O113

Presentation Type: Oral Presentation

Presenter(s): Brenda Rudolph

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Inspiration From a Small River Town-Little Falls

Abstract:
Many perceptions of rural town communities are having no relevance or inspiration contributing to the history of Minnesota. We tend to look at larger metropolitan areas for inspiration of people who have impacted our history. Little Falls, Minnesota a city of 8,700 residents sits quietly on both sides of the Mississippi River in the center of the state. This small town is not at the top of the list when we look for inspiration in how we look at our state, but it should be. As I dig deeper into what has created Little Falls, I will find the Pine Tree Lumber Co was created by two bachelors who came to Little Falls for logging. Ojibwe chief, Pugonakeshig, Hole in the Day, is buried outside of Little Falls in the Hole in the Day Bluffs. Laura Jane Musser, daughter of logging tycoon, brought art and music to Little Falls. At Blanchard Dam, a geological phenomenon can be found in rocks called Cross Rocks.. These rocks can only be found in a few places in the US. Little Falls is home to a national aviator. Charles A. Lindbergh. Little Falls is filled with depth and heritage of different backgrounds giving inspiration and relevance to rural communities.

Abstract Code: O114

Presentation Type: Oral Presentation

Presenter(s): Jason Probst

Faculty Mentor(s): Robert Galler

Husky Compact Dimension: Seek and Apply Knowledge

Title: Staring form ground zero - The success of White Earth Reservation

Abstract:
From being restricted to a piece of land, The band of Ojibwe (Chippewa) on the White Earth Reservation have been through a struggle and are on the upswing of economic and cultural stability. Although the White Earth Reservation is not on par with other tribes like Mdewakanton of Shakopee. While holding onto their cultural practices the people of White Earth are also maintaining a sense of economic success. In this project I am arguing that while most people can look at the reservation and see poverty (which there is plenty of), I want to show the success of these people as they climb the economic ladder, all while holding onto their beliefs and language.

Abstract Code: O115

Presentation Type: Oral Presentation

Presenter(s): Sidney Alfonso

Faculty Mentor(s): Paul Neiman

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Same Nativism different Immigrants.

Abstract:
For my project I will be defining, dissecting, and analyzing historical perspectives, language, and examples of Nativism within the history of immigration within the United States. To accompany this I will show that the same sentiments from our earliest immigrations laws to our current policies is still being used to denigrate and villianize immigrants as well as citizens of color.

Abstract Code: O116

Presentation Type: Oral Presentation

Presenter(s): Othman Doudin

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Seek and Apply Knowledge

Title: Does Military Spending in the U.S. Come at a Cost to Health Outcomes?

Abstract:
The goal of this research is to investigate the effect of the military spending on the health care system in the United States. Determine what kind of relationship between increasing the military spending and the slow growth of the life expectancy in the US. This research will investigate two models, the first one will determine how military spending affected health cost and the second model will determine how health cost affected life expectancy. The first model, health cost will be the dependent variable. And income per capita will be the first independent variable. The second independent variable will be the military spending as percentage of GDP. Also the government spending on health care as percentage of GDP will be considered as an independent variable. The paper assume that spending more and more of the government budget on military, that comes with an opportunity cost that affect the other sectors including health care. In the second model, the paper will investigate life expectancy in the united states by compare life expectancy in the US with some other developed countries such as the united kingdom, japan and Australia. In the second model life expectancy will be the dependent variable. The first independent variable will be health cost per capita. Also the percentage of people without health insurance, poverty rate, and government spending on health as a percentage of GDP. Moreover, this paper will forecast the effect of decreasing the military budget on GDP and at the same time we increasing the spending on health care system. With every dollar more we spend on health care how much increase in GDP we get by taking that dollar from military spending.

Abstract Code: O117

Presentation Type: Oral Presentation

Presenter(s): Travis Boland

Faculty Mentor(s): David Switzer

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Macroeconomic Effects of ATM's and the Implications for the rise in Digital Banking Technologies

Abstract:
Digital banking technology has fundamentally changed the way consumers interact with money and banking. This revolution in banking has created a showdown between banks over the fastest payment standards and online lending opportunities. To stay competitive banks across the world have begun to digitize nearly every aspect of their businesses. Perhaps one way of determining the effect this will have on the economy is to explore the last significant banking technology revolution: ATM's. This paper explores the empirical effects of automated teller machines on macroeconomic variables such as interest and inflation rates. The goal of this research project is to determine whether there is a positive or negative relationship between the introduction of ATM technology and economic growth. Other variables in this study will include income per capita and money supply. This study will be conducted across dozens of international economies to ensure the results are robust as possible. Since the 1970's ATM usage has steadily risen and in turn increased the availability of money. This is due to ease of access to currency and ATM services by consumers across the globe. If ATM's do in fact have an influence on macroeconomic variables, that effect can be leveraged to benefit economies across the world. These results could be especially useful for countries who have not yet introduced such technology, as well as providing valuable information to countries on how their ATM's are currently affecting macroeconomic variables. Through research on the effect ATM's have on the economy, countries could potentially reap the benefits of ATM usage or enact monetary policy to offset any negative findings. The results from what we learn about how ATM use affected the economy may inform our knowledge of how current and future banking technologies will affect our lives.

Abstract Code: O119

Presentation Type: Oral Presentation

Presenter(s): Kyle Rozendaal, Yen-Ting Guo

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Ransomware: Effects, Incident's of Compromise, and Evidence of a Crime

Abstract:
We are planning to present a group project from Digital Forensics and Ethicsâ€"Information Assurance 681 taught by Mark B. Schmidt.In this project we will have fabricated a cyber-crime leaving details and evidence behind for classmates to have picked-up on along the way. The crime we are planning to fabricate will include details of a crime with the attempted cover-up of encrypting the entire hard drive with ransomware.Ransomware is a growing threat in an ever more digital age. When vital files and functions are encrypted, locking users out from them, the only way to recover these are either to have specialist deal with the attack or pay off the ransom that often comes with these attacks. With the frequency of attacks growing and the eternal arms race between perpetrators and defenders, these acts will only become more difficult to prevent and to counter. These attacks, while not always successful, can still find a way to wreak havoc with an organization's system, causing them to disrupt and suspend operations as systems are cleaned and files are recovered. Digital Forensics helps in the recovery of ransomware attacks by attempting to search for and identify files that may have caused the malware to infect the computer or network.We plan to present our project binder in the form of a poster: outlining the process of fabricating a digital crime and typical attempts to cover their tracks. A portion of the project is to investigate a crime fabricated by another group in the class and we will also present a demonstration of how to operate a basic forensic workstation wherein we are able to recover deleted files, search for files that have been overwritten, and retrieve data that was thought to have been lost/removed permanently.Finally, we plan to answer questions about copying digital evidence forensically and in a manner which allows the findings to be used as evidence in a court of law.

Abstract Code: O120

Presentation Type: Oral Presentation

Presenter(s): Casper Groenenboom, Guliano Merino, Lauren Glassbrenner, David Zietlow, Jason Klosinski, Mohamed Yusuf, Brittney La Faive, Victoria Volkmann

Faculty Mentor(s): Isolde Mueller

Husky Compact Dimension: Seek and Apply Knowledge

Title: Alles Gute zum 150. Geburtstag. SCSU in St. Cloud's German newspaper Der Nordstern with sources from 1876-1917

Abstract:
Come to our presentation and view SCSU through the lens of St. Cloud's German speaking community from the year 1876 until 1917. Our project is sure to broaden the experience of St. Cloud State University's 150th anniversary. We dug through St. Cloud's most read German newspaper in its day, known as Der Nordstern, and translated a wide variety of articles relating to SCSU's early years. Through careful searching, reading and translation, we were able to follow St. Cloud State University's early developments as well as capture the lives of the people who lived it. The translation process required great attention to detail to fully grasp the true essence and meaning of these century old news stories. In order to do so, the group was not only tasked with crossing the language barrier between English and German, but also the language and cultural barrier between the 21st and 19th Century. This required us to read Gothic script, adapt to grammatical differences, and reinterpret the meaning of common vocabulary. From celebrating the arrival of new students, faculty, and presidents, to the mourning of their departure and passing, the project reawakenes the early stories of St. Cloud State University which had been dormant for over a century, making it available for the campus community of today.

Abstract Code: P1

Presentation Type: Poster Presentation

Presenter(s): Noel Jones

Faculty Mentor(s): Matthew Davis

Husky Compact Dimension: Seek and Apply Knowledge

Title: Biogeographic Patterns of the Three-barbeled Catfishes (Heptapteridae: Rhamdia) Across Central America

Abstract:
Three-barbeled catfishes in the genus Rhamdia are widely distributed throughout Mexico, Central America, and South America. There are currently 26 recognized species in the genus and they occupy a variety of freshwater habitats, including cave-dwelling species that are pigmentless with reduced eyes. Several species of Rhamdia are widely distributed across Central America, and previous works have suggested that this lineage of catfishes may include cryptic biodiversity that has remained undiscovered. In this study we examine the evolution of the three-barbeled catfishes distributed broadly across Central America. We investigate the population genetics of Rhamdia catfishes throughout a range of freshwater habitats and sampling localities. The objective of this work is to reconstruct the evolutionary relationships of the three-barbeled catfishes with population-level sampling that will allow us to identify cryptic species diversity to document new species and infer freshwater biogeographic patterns for this lineage of fishes as they evolved throughout Central and South America. This work allows me to seek new knowledge and document species that no one has ever heard of before, and to communicate these novel findings to a broad audience. The first step in saving biodiversity and conservation is to identify what exists, and this work will be important to conservation efforts in hot-spots of endemism throughout Central America.

Abstract Code: P2

Presentation Type: Poster Presentation

Presenter(s): Mackenzie Forseth

Faculty Mentor(s): Louise Millis, Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: BLASTing to Delftia Identification

Abstract:
Between fall 2017 and spring 2019, an unknown Delftia species was isolated from a soil sample and characterized using standard biochemical testing and 16S rDNA sequencing. However, 16S rDNA sequencing is 95% accurate, and this unknown Delftia isolate presents similarly to Pseudomonas aeruginosa. The genus Delftia has had several family changes. It was originally identified as a member of the Pseudomonadaceae family. After genetic sequencing it was renamed into the Comamonadaceae family. My objective is to research several stress responses that Pseudomonas aeruginosa and Delftia acidovorans exhibit and compare their responses to this unknown Delftia isolate to determine if behaves in the same manner under the same conditions. The first step to comparing stress responses is to further confirm the genus. Genetic analysis between the genera Delftia, Pseudomonas, and Comamonas has been performed. This was done using Mauve alignments to compare the genomes of a species from each genus by looking at genetic evolutionary events such as rearrangement. Housekeeping genes that are unique to each genus have also been identified. PCR primers targeting these genes were designed and created, and PCR was performed to evaluate which genes from these genera are present in this unknown Delftia isolate.

Abstract Code: P3

Presentation Type: Poster Presentation

Presenter(s): Jeremy O'Hara

Faculty Mentor(s): Sara DeVos

Husky Compact Dimension: Seek and Apply Knowledge

Title: Post-Secondary Belongingness Scores: How Peer Wellness Coaching Impacts the Results

Abstract:
In our current college/university environment, campuses struggle to retain students throughout the entirety of their academic career. As colleges begin to explore strategies and efforts to increase student persistence and degree completion, St. Cloud State University implemented a variety of approaches to help combat this widespread issue, one of which is Peer Wellness Coaching. Peer Wellness Coaching is a free service that offers all students at St. Cloud State an opportunity to discuss their personal goals in a collaborative and encouraging environment. This service is a collaborative effort between student life and various academic departments. Research has revealed that a sense of belonging plays a critical role in student persistence and will therefore lead to a positive increase in student retention. Peer Wellness Coaching provides a way for students to connect with others and campus resources available to them thereby increasing their sense of belonging and overall health and wellness. Coaches are specially trained in Motivational Interviewing; they utilize their skills to help support students by enhancing wellness, health and success through engaging conversations about strengths and goals.This study aims to build on available research which demonstrates how an individual's perception of belonging at their college/university is related to retention rates. The objective of this research presentation is to further the body of knowledge available regarding the relationship between Peer Wellness Coaching and experiences of students' belonging, based on the Social Belonging Index (SBI). Research on belongingness demonstrates students' perceptions of belonging correlates to retention and degree completion. The current presentation will work to determine if Peer Wellness Coaching is an effective strategy to increase students' sense of belonging at St. Cloud State; positive results towards improving student retention and academic success.

Abstract Code: P4

Presentation Type: Poster Presentation

Presenter(s): Tarynn Johnson

Faculty Mentor(s): Phyllis Greenberg

Husky Compact Dimension: Seek and Apply Knowledge

Title: Ageism in Health Care: 72 is NOT a Diagnosis

Abstract:
The goal of this research was to look at an array of literature and other cases in order to show relationships between the older adult population, ageism, and healthcare. This research poster was presented at the Annual Gerontological Society of America Conference in Austin, TX in November of 2019. Abstract: Experts in aging often underscore the profound heterogeneity of the elderly population by saying, "If you've seen one 85-year-old, you've seen ONE 85-year-old." Unfortunately, the reported experiences of older adults suggest that health care providers remain prone to stereotyping older adults or "applying age-based, group characteristics to an individual, regardless of that individual's actual personal characteristics" (Manicou, 2006). In Dr. Erdman Palmore's Ageism Survey (2001) of community-dwelling older adults ages 60 to 93, 43% of respondents reported that "a doctor or nurse assumed my ailments were caused by my age" and 9% said they were "denied medical treatment because of age". Through education and eliminating stereotypes around aging, we can further provide better care for older patients, clients, and even family in order to ensure a holistic health care approach that considers more than just age.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: P5

Presentation Type: Poster Presentation

Presenter(s): Hannah Judovsky

Faculty Mentor(s): Grama Rangamani

Husky Compact Dimension: Seek and Apply Knowledge

Title: Factors Influencing Communication Quality of Life in Persons with Aphasia: Results & Implications

Abstract:
Aphasia is a language disorder that occurs as a result of a stroke. Persons with aphasia may experience deficits in all areas of communication including verbal expression, comprehension of language, writing and/or reading. Past research has found communication deficits to be linked to social isolation and lower quality of life (QoL) in persons with aphasia (PWA; Cruice, Worrall, Hickson & Murison, 2003). Some previous studies have considered how QoL is impacted by aphasia, however there is limited research on how aphasia impacts communication quality of life (CQoL) and how these differences between groups are measured. The present study examined both QoL and CQoL in relation to post-onset periods, aphasia severity level, cognitive impairments, and therapy received and discuss their implications to aphasia management. Additionally, the questionnaires used to measure QoL and CQoL were compared to determine if they measure similar aspects of QoL or CQoL.

Abstract Code: P6

Presentation Type: Poster Presentation

Presenter(s): Candice Zehner, Claire Tollefsrud, September Prushek

Faculty Mentor(s): Tina Sacin, Andria Belisle

Husky Compact Dimension: Seek and Apply Knowledge

Title: Expanding Support for Students with Autism and ADHD at St. Cloud State University

Abstract:
Your freshman year of college is filled with an array of confusing events, expectations, and life transitions. What will be your program of study? How will you make friends? How will you keep friends? Who am I? How do I pass my classes? It is hard for anyone coming into college to tackle so many stressful events. It becomes increasingly difficult if you are someone with a learning disability and/or social implications. Currently at Saint Cloud State University there are 673 students that utilize Student Accessibility Services. 49 students of which are diagnosed with Autism (ASD) and 210 students diagnosed with ADHD. In a US study it was shown that only 17% of people with ASD will attend a 4-year college and only 20% will graduate from college. This is not to say that these students do not have the abilities to be successful in college, but it does question how we shape our universities to be inclusive and supportive to people with these disabilities. The research we present was pulled from the general needs of people with autism nationally combined with the needs that our SCSU students with ADHD and autism have identified as being central needs of support and assistance within college universities. We plan to expand this research in the Fall of 2020 to implement a new and research-based 8-week support and psycho-educational group for people with autism and ADHD. We hypothesize that students with autism and ADHD at SCSU that participate in this group, will identify as feeling greater support from the university and will have better performance outcomes.

Abstract Code: P7

Presentation Type: Poster Presentation

Presenter(s): Riti Shrestha, Lucy Rai Thulung

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Enzyme Activity and Kinetics of Cyclohexadienyl Dehydrogenase Followed by Amino Acid Substitution via Site- Directed Mutagenesis: Replacing Histidine with Proline

Abstract:
Cyclohexadienyl dehydrogenase, also known as arogenate dehydrogenase, belongs to the oxidoreductase family. The members of oxidoreductase family catalyze the transfer of electrons from one molecule to another. The gene encoding for the enzyme was isolated from Sinorhizobium meliloti, which is a gram-negative bacterium. These bacteria are found in the roots of legume plants as a symbiont that fix the atmospheric nitrogen. Cyclohexadienyl dehydrogenase has two enzymatic functions: it can function as prephenate dehydrogenase to convert prephenate to 4-hydroxyphenylpyruvate, which eventually is converted into tyrosine, and catalyzes the oxidation of L-arogenate to produce L-tyrosine, carbon dioxide, and NADH. Tyrosine is a non-essential amino acid that can be derived from phenylalanine in the body when the dietary requirement is not met. Also known to improve alertness, attention, and focus, tyrosine level is crucial as it gets metabolized into catecholamine neurotransmitters. In addition, tyrosine residues are found in receptor tyrosine kinase, tyrosine kinase, and so on which play significant roles in signal transduction, and multiple metabolic pathways. Cyclohexadienyl dehydrogenase has two domains with various residues around its active site. Histidine 123 residue was found to be conserved in this enzyme. Via site directed mutagenesis, the nucleotide that codes for Histidine, CAC, was substituted with nucleotides for Proline, CCG. Site directed mutagenesis is a biomolecular technology that can make specific change in a gene sequence by using DNA primer, a short single stranded nucleic acid, that contains the desired mutation and is complementary to the DNA template that codes for Cyclohexadienyl dehydrogenase. The purpose of this work was to observe the changes in the enzyme kinetics and activity after replacing Histidine 123 with Proline. The mutation will be followed by comparison of enzyme kinetics and activity of both wild type and mutated enzyme.

Abstract Code: P8

Presentation Type: Poster Presentation

Presenter(s): Lindsey Montag, Nick Delaney, Lauren Julian

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Histological Study of the Effects of Sodium Bicarbonate on Pancreatic Inflammatory Lesions in NOD Mice

Abstract:
Type one diabetes (T1D) is an autoimmune disorder where the body's T-cells attack the pancreatic β -cells in the islets of Langerhans. In healthy individuals, these β -cells produce insulin required to maintain blood glucose levels; however, in individuals with T1D β -cells are destroyed through a T-cell-led attack causing an absence of insulin production and an overall increased blood glucose level. A NODâ€¯mouse model is often used in diabetes research as these mice have been shown to spontaneously develop T1D as result of insulitis (T-cell infiltration of pancreatic islets) similarly to humans. In a recent study, sodium bicarbonate (SB) was shown to have anti-inflammatory properties, which may be beneficial in delaying incidence and severity of T1D. Thus, the objective of our study is to elucidate the effect of SB treatment on the insulitis lesions in pancreata of NOD mice during development of T1D. It is hypothesized that SB-treated mice will have lower insulitis levels which will be analyzed through histological techniques. The treatment of 20 mM SB added to a drinking water will start in a pre-diabetic phase, when mice are between 7-9 weeks of age. The control group will receive pure water. At 18 weeks, the mice will be sacrificed, pancreata harvested, fixed in formalin, and embedded in paraffin until finally sectioned, and stained with eosin and hematoxylin.â€¯ The microscopic evaluation of the level of T-cell infiltration will be semi-quantified by scoring each islet from a particular mouse on a scale from 0 to 4 (0 = no infiltration; 1= peri-islet infiltration; 2, 3 and 4 = up to 30%, 30-50% and 50-100% islet infiltration, respectively), and calculating the insulitis index by three independent researchers. This study will show whether SB treatment prevents/decreases inflammatory pancreatic lesions during T1D development in NOD mice.

Abstract Code: P9

Presentation Type: Poster Presentation

Presenter(s): Eleanor Nelson, Aroshi Wijesekara

Faculty Mentor(s): Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effects of Sodium Bicarbonate Treatment on Adaptive T Cell Immunity in Type 1 Diabetic NOD Mice

Abstract:
Type 1 diabetes (T1D) is an autoimmune disease in which cells of adaptive immunity called T lymphocytes (T cells) destroy the insulin-producing β cells of the pancreas, causing dangerously high blood glucose levels that can lead to life-threatening systemic disease. These lymphocytes include T-cytotoxic (Tc) cells, which kill β cells directly, and T-helper (Th) cells which kill them indirectly. Other T cells, called T-regulatory (Treg) cells, protect β cells. Recent research has suggested that sodium bicarbonate (SB) may have anti-inflammatory properties, alluding to potential delay in onset of autoimmune diseases. An initial pilot experiment, performed in a chemically-induced T1D mouse model, demonstrated the beneficial effect of SB treatment in development of T1D, accompanied with a lower level of destructive cells. It is therefore hypothesized that ingestion of SB in a spontaneous, non-obese diabetic (NOD) mouse model would exhibit lower levels of destructive Tc and Th cells and/or higher levels of protective Treg cells than those in a control group. NOD mice are the best model for studying T1D because they develop it spontaneously, similarly to humans. Tc, Th, and Treg cells will be analyzed in NOD mice treated with 20 mM and 200 mM SB using drinking water as a vehicle. Mice began drinking treatment or control water at 7-9 weeks of age. They will be sacrificed at two end-time points, 14 and 24 weeks of age, or after two consecutive blood glucose readings of >250 mg/dL. Spleens will be removed and single cell suspensions created. Cells will be counted, exposed to fluorescent-labeled antibodies against the specific surface markers present on particular T cell types and quantified by an instrument called flow cytometer. Results of this study will show whether anti-diabetic property of SB treatment in a NOD mouse model is associated with its action on T cells.

Abstract Code: P10

Presentation Type: Poster Presentation

Presenter(s): Emma Nelson

Faculty Mentor(s): Zeljka Maglica (University of Rijeka, Croatia) and Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effect of Lactobacillus acidophilus on the growth of Escherichia coli

Abstract:
Probiotics are microorganisms that have beneficial health effects, primarily through the improvement of gut flora. Lactobacillus acidophilus (L. acidophilus) is a probiotic found in mouths, intestines, and vaginas of healthy organisms, and has been shown to have positive effects on bacterial vaginosis, diarrhea, and eczema. Escherichia coli (E. coli) are bacteria found in intestines of healthy animals, although there are pathogenic strains that can cause diarrhea, cramping, and vomiting to the infected animal. If an individual consumes contaminated food or water, they may contract an E. coli infection. Studies have shown that Lactobacillus may inhibit the growth of microorganisms such as Shigella and Salmonella. This experiment seeks to determine whether L. acidophilus can inhibit the growth of E. coli. L. acidophilus produces lactic acid, and E. coli is intolerant to low pH levels. It is therefore hypothesized that E. coli growth will be inhibited when grown in co-culture with L. acidophilus. To do this, three cell suspensions were incubated at 37° C in LB/MRS mixed broth: one with ~10^6 E. coli cells; one with ~10^7 L. acidophilus cells; and one with a mix of ~10^6 E. coli and ~10^7 L. acidophilus cells. At the start of the experiment and after 2, 4, 6, and 18 hours dilutions were made for each suspension and placed on LB agar plates. After overnight incubation at 37° C the individual E. coli colonies were counted. Results showed no difference in E. coli grown alone versus with L. acidophilus at the 0, 2, 4, and 6-hour timepoints, but there was a significant difference (p-value <0.05) at the 18-hour timepoint. The results support the initial hypothesis, however further studies are necessary to determine the mechanism of action.

Abstract Code: P11

Presentation Type: Poster Presentation

Presenter(s): Amira Zaher

Faculty Mentor(s): Antonijia Jurak Begonja (University of Rijeka, Croatia) and Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Effect of a Type 1 Diabetes-induced Cellular Stress Caused by Type 1 Diabetes on Megakaryocyte Maturation and Platelet Formation in a Chemically Induced Mouse Model of the Disease

Abstract:
Type 1 diabetes (T1D) is an autoimmune disease caused by the T-cell mediated destruction of insulin-producing β -cells in the pancreatic islets of Langerhans. T1D is mainly characterized by hyperglycemia accompanied by numerous complications such as retinopathy, renal failure, and cardiovascular disease. Platelets contribute to the vascular complications of T1D, and recent studies have shown enhanced platelet production in diabetes. Platelets are blood cells that arise from a precursor known as megakaryocytes (MKs) and they are responsible for clotting and hemostasis. Hematopoietic stem cells in the bone marrow differentiate into MKs that mature and utilize their lipids to produce platelets. Recent studies have shown that there is a high abundance of Vps34, a phosphatidylinositol-3- kinase that produces a specific type of lipid in the nucleolus of MKs. Since the nucleolus is a sensor for cellular stress, this finding is a potential indicator that MKs play a role in T1D-associated vascular complications. In this study, it was hypothesized that T1D-induced stress would positively impact Vps34 and therefore up-regulate MK maturation and platelet formation. T1D was induced in C57BL/6J mice using a high dose of streptozotocin injection. A control group was injected with anti-platelet antibodies to induce thrombocytopenia and increased megakaryopoiesis. Five days after injections, mice were euthanized, and spleen and bone marrow samples were collected for histological analysis. Bone marrow cell culture was carried out and MKs were obtained for immunofluorescent staining for Vps34 and nucleolus markers in order to evaluate MK maturation. This study might contribute to the understanding of an association between the thrombocytes and T1D.

Abstract Code: P12

Presentation Type: Poster Presentation

Presenter(s): Alex Maile

Faculty Mentor(s): Matthew Davis

Husky Compact Dimension: Seek and Apply Knowledge

Title: Evolution of Biofluorescence in the Rabbitfishes (Siganidae)

Abstract:
The family Siganidae includes 29 species of marine fishes in the genus Siganus. Rabbitfishes are distributed throughout the Indo-Pacific in shallow marine habitats. Recent studies have identified that many inshore marine fishes are biofluorescent and further work is needed to survey and document the variation of biofluorescence among fishes. In this study we identify that rabbitfishes exhibit prominent fluorescent emission patterns on their venomous spines, particularly those associated with the first dorsal and anal fin. Rabbitfishes are herbivorous fishes that possess prominent venom glands associated with venomous spines on their dorsal and anal fins used predominantly for defensive behaviors. We document that rabbitfishes exhibit highly prominent green fluorescent patterns on their venomous spines compared to other fluorescent areas of their bodies. To date no patterns of biofluorescence associated with venomous spines are understudied and it is possible these emission patterns serve an aposematic warning pattern to organisms that can visualize fluorescence in marine systems.

Abstract Code: P13

Presentation Type: Poster Presentation

Presenter(s): Lucy Rai Thulung

Faculty Mentor(s): Satomi Kohno

Husky Compact Dimension: Seek and Apply Knowledge

Title: Endocrine disrupting chemicals and their effects on estrogen receptor

Abstract:
Northern Leopard frogs, Rana pipiens, are one of the most abundant species of frogs and are the state amphibian of Minnesota. Skeletal abnormalities and malformations in these frogs have been reported in the urban areas of the northern U.S., which have concerned environmentalists about the endocrine-active contaminants level in water resources. Endocrine Disrupting Chemicals (EDCs) are chemicals that obstruct the endocrine system, which is responsible for the regulation of hormones. One of the ways EDCs contaminate water sources is by storm water. Although storm-water treatment ponds have been designed to check the level of EDCs, EDCs are not eliminated completely. Estrogenic EDCs mimic estrogen hormone, which is responsible for regulation of female reproductive system, secondary sex characteristics, and limb development. Storm water treatment ponds have been turned into reservoir for such estrogenic EDCs. As a keystone species of many ecosystems, the abundancy of frogs in environment is crucial. Detection and elimination of EDCs introduced by humans to the environment should be carried out with an utmost importance before EDC becomes the matter of urgency. To determine the presence of estrogenic EDCs in the storm water treatment ponds, luciferase reporter gene assay will be utilized. The luciferase reporter gene assay works by illuminating the growth of bacteria, which is used to replicate the target genes. Luciferase is an enzyme that makes the fireflies glow. Before the assay can be used, the estrogen receptor must be cloned, amplified, transformed into a competent bacterial host. If the bacterial cultures glow, it can be concluded that the stormwater contains estrogenic EDCs; or if the culture does not glow, it can be concluded that the stormwater does not contain estrogenic EDCs.

Abstract Code: P14

Presentation Type: Poster Presentation

Presenter(s): Naqsh E Zafar

Faculty Mentor(s): John Sinko

Husky Compact Dimension: Seek and Apply Knowledge

Title: Energy Distribution Diagram for Laser Vaporization of Aluminum Space Debris

Abstract:
The ultimate application of the results of this project is to use lasers to remove space debris from near-Earth space. As of now, only two-fifths of the 5000 satellites in orbit are functional. The European Space Agency estimates that there are over 120 million debris particles (1-10 mm diameter). Each of these particles has the same kinetic energy as a military rifle bullet (20000 J). The interactions of these particles with each other and existing satellites could potentially snowball into a shrapnel storm in near-Earth space that NASA has dubbed the Kessler Syndrome. Our specific goal in this project is to construct a Sankey diagram associated with energy distribution of these interactions. Since 20-50% of this debris is made of aluminum, aluminum samples with known composition will be polished to a specific roughness using a scientific grinder. Then, the aluminum sample and force sensor will be placed in a vacuum chamber where a pump and pressure gauge will be used to simulate near-Earth space. The sample will then be fired at with a laser while a high-speed camera records the interaction on the laser-aluminum boundary. The force sensor will be used to determine the energy absorbed by the sample and the momentum transfer that occurs. ImageJ and the video footage will be used to determine the kinetic energies of the mass removed while a scientific balance and an optical profilometer will be used to measure the actual loss of mass from the sample. All relevant data will then be organized in Excel and moved to Minitab 17 for analysis and processing.

Abstract Code: P15

Presentation Type: Poster Presentation

Presenter(s): Subi Dangol

Faculty Mentor(s): Ramnath Sarnath

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Improved Algorithms for a Common Assignment Problem

Abstract:
We are entering a world where massive amounts of data can be stored and processed by computers. When these large data sets are structured and analyzed correctly, it can provide valuable insights to help make better decisions. Unfortunately, handling large volume of data can be overwhelming and expensive. To deal with the large data volume in a timely manner, we need to find new approaches and evaluate their effectiveness. In this research, we will be evaluating the effectiveness of new approaches to a real-world resource allocation problem called the Load Balancing with Overloading Penalties. The main objective of this problem is to find the best assignment of users to their desired service providers (which could be a school, a hospital, or a mobile phone tower). This problem also addresses the issue of decrease in quality when a service provider is over-utilized by using a penalty variable. Due to the complexity and additional constraints of this problem, finding the best solution can very difficult and even impossible depending on the size of the data. We have come up with a new approach to this problem that is more accurate than the existing solutions while still being time efficient. Our solution takes advantage of some known results from Graph Theory and existing solutions by breaking the problem down into different graph search algorithms for better data arrangement and faster processing. This new approach also has the possibility to open a new way to view this problem that could lead to more discoveries.

Abstract Code: P16

Presentation Type: Poster Presentation

Presenter(s): Andrii Vatulin

Faculty Mentor(s): Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: Anaerobic digestion and a Core Microbiome: An Open Question in Need of an Answer

Abstract:
Anaerobic Digestion is a microbially mediated process turning organic matter into biogas and biofertilizer. This kind of waste decomposition is advantageous over traditional waste management for its low energy requirements, potential energy recovery, reduction of greenhouse gas released into the atmosphere, and production of environment-friendly fertilizers. However, the lack of information about the establishment and stability of the core microbial community composition needed to sustain this process and to make it economically viable has hampered its deployment. Decrease of the biogas production caused by a fatal microbial community collapse is one of the major issues encountered. This study focuses on the commonalities in microbial community compositions of infeed and digestate present in four anaerobic digesters different in their designs, infeeds, sizes, and operational temperatures to determine a shared microbial community.Anaerobic digesters situated on a farm, at a wastewater treatment facility, at St Cloud State University, and at the University of Minnesota laboratories were sampled: infeed, digestate, outfeed. These digesters operate respectively on manure, wastewater and high strength waste from breweries, manure and food waste mix from the campus cafeteria, and food waste (calculated average waste proportions). All digesters operate in mesophilic conditions; the size is from two liters to 1.6 million liters; hydraulic retention time is from 9 to 58 days. Samples were collected from all points where organic matter was supposedly changing the composition of its microbial community. The microbial communities were characterized using bacterial and archaeal specific 16S rRNA primers and high throughput sequencing with Illumina Miseq.Our analysis showed that the two most prevalent genera are Methanobrevibacter (farm digester 0.5-74%, SCSU 1.5-30%, UOM 0.8-1%, WWTP 0.8-16%) and Lactobacillus (farm digester 2-40%, SCSU 2.5-14.5%, UOM 2-20%, WWTP 5-29%) were consistently present throughout the digestion process but their relative abundance was different between the sampling sites, with methanogens more abundant in the output samples than in the waste prior digester exposure. A determination of a core microbial “recipe” is a valuable instrument that allows for the establishment of a stable yet diverse community and at the same time will assist an operator in cases when a microbial community is struggling due to the changes in infeed physical or chemical composition.

Abstract Code: P17

Presentation Type: Poster Presentation

Presenter(s): David Reimer

Faculty Mentor(s): Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: Transcriptional Analysis of Campylobacter jejuni Adhesion Within the Rhizoplane of Spinacia oleracea

Abstract:
With today's society becoming more health conscious and determined to live a healthier lifestyle, the consumption of raw vegetables and organic foods are increasing in popularity. As a result, rising numbers of foodborne illnesses are being reported while food industries are increasing their awareness to contamination of meats and produce. While some pathogens, such as E. coli O157:H7 and Salmonella, make national headlines due to their debilitating and possible life-threatening illnesses, the lesser known infectious pathogen Campylobacter jejuni is the fourth leading cause of gastrointestinal illness in America. Mainly causing diarrhea, abdominal cramping, vomiting, and sometimes bloody stools, this stereo-typical foodborne illness typically resolves without residual effects within 1-2 weeks. Although asymptomatic in some people and longer lasting illness in others, C. jejuni has been known to cause rare sequelae such as Guillain-Barré syndrome, reactive arthritis, and inflammatory bowel disease.Albeit C. jejuni is most commonly found in poultry, cases of campylobacteriosis have been increasingly linked to vegetables. Previous studies have indicated the cause of contamination due to manure form infected livestock being used as fertilizer for crop fields. The contaminated crop fields in turn causes the produce to be harvested with C. jejuni. The mechanism by which Campylobacter survives in the soil is poorly understood. Furthermore, whether the bacteria are attaching to the produce and poorly washed or internalized into the plant itself is not known. This study investigates the adhesion of C. jejuni to the roots of Spinacia oleracea, a commonly cultivated spinach. Since bacterial adhesion to its host is a critical invasive mechanism prior to internalization, increased transcriptional response of the adherence proteins and genetic components when exposed to roots can be proposed as being suggestive of internalization as a mechanistic cause for vegetable contamination.

Abstract Code: P18

Presentation Type: Poster Presentation

Presenter(s): Ellanna Pomplun

Faculty Mentor(s): Patty Waletzko, Kathryn Mayhew

Husky Compact Dimension: Seek and Apply Knowledge

Title: Misconceptions about drinking alcohol during pregnancy

Abstract:
Over recent years, there has been some controversy surrounding the question of whether or not pregnant women can drink alcohol without harming their unborn babies. In my research, I will find reliable answers for people wondering about the effects of drinking while pregnant. Some research shows that it is okay to drink while pregnant, some research suggests safe amounts of alcohol consumption, and yet other research shows that no amount of alcohol is safe during pregnancy. Some of the information I will be gathering include the effects caused by a mother drinking while pregnant, specifically Fetal Alcohol Spectrum Disorders (FASD). As part of my research, I will gather information on websites that say it's okay to drink while pregnant and establish why this advice is inaccurate. In addition, I will suggest sources for women to get help if they struggle with drug and alcohol abuse. Through an examination and comparison of online sources including the medical evidence from authoritative sources, this paper will demonstrate that pregnant women should not drink alcohol.

Abstract Code: P19

Presentation Type: Poster Presentation

Presenter(s): Aunie Ellis

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Science of Salem

Abstract:
This Salem Witch Hunt is one of the most bewildering events in history-- deserving of detailed analyzation. In this project, I'm going to be delving into the factors that caused the Witch Hunt-- an event in which a series of women were persecuted, and even killed, under the presumption that they were witches. No confirmed conclusion has been come to, but with further research, I intend to expand on the factors that caused such an event, and lead a new vector in the discussion.

Abstract Code: P20

Presentation Type: Poster Presentation

Presenter(s): Annisa Rumahorbo, Xeroxa Joshi

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Single-point Mutation of Lys 75 Residue Effects on Pyrroline-5-Carboxylate Reductase (ProC) Gene Expression in Escherichia coli

Abstract:
Sinorhizobium meliloti is a type of bacteria that forms N (2)-fixing root nodules in legumes of host plant. This provides a nutrient source for the host plant. These bacteria play important roles to prevent plant immune response from invasion by supplying proper signals to establish the symbiosis. These bacteria contain a genomic DNA called proC that produces a protein that is hypothesized to catalyze the formation of L-proline from pyrroline-5-carboxylate. There is very few information regarding the structure and function of this protein. The objective of this experiment is to investigate the specific residues of amino acids that directly play a role in the conversion of pyrroline-5-carboxylate to L-proline. Comparison of a few species containing similar genes was obtained using BLAST, and conserved amino acids across species were analyzed to target a mutation in the gene. From these conserved amino acids, a particular amino acid of Lys 75 was mutated to Cys 75 to find out the effect of the mutation of this residue on the conversion of L-proline from pyrroline-5-carboxylate. A primer containing a point mutation was designed and used in a site directed mutagenesis using PCR. DNA vector containing the point mutation was subsequently expressed in Escherichia coli and the recombinant protein was purified. Once pure protein is obtained, the effect of the single amino acid mutation will be assessed using kinetics methodology.

Abstract Code: P21

Presentation Type: Poster Presentation

Presenter(s): Shireen Delfanian

Faculty Mentor(s): Matthew Davis

Husky Compact Dimension: Seek and Apply Knowledge

Title: Survey of Locomotion Patterns of Deep-sea Fishes

Abstract:
In this study we surveyed locomotion patterns across lineages of deep-sea fishes that occupy pelagic (open ocean) and benthic (sea floor) environments. In general, fishes swim through either variations of body/caudal fin (BCF) or median and paired fin (MPF) propulsion. Species that use BCF compared to MPF propulsion do so in a number of diverse ways; ranging from fin adaptation to specific body undulation. Analysis on their propulsion can lead to advancements in cyber-robotics as well as answering questions about their functional evolution. The objectives of this study included (1) surveying locomotion strategies by comparing the functional anatomy of the propulsion mechanisms of deep-sea fishes and (2) surveying locomotion strategies through open-access behavioral videos obtained through remote operated vehicles (ROV) and published by projects such as the NOAA Okeanos expeditions. While there are hundreds of hours of deep-sea behavioral footage of various animal lineages, few surveys of these publicly available resources have been conducted that incorporates taxonomic expertise to identify observed species and record information on their locomotion behaviors while alive. This work adds significant insight into how deep-sea fishes navigate their environment.

Abstract Code: P22

Presentation Type: Poster Presentation

Presenter(s): Benjamin Gutschow

Faculty Mentor(s): Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: Comparative Analysis of Methanogen Growth- SAB versus BHI Media

Abstract:
The ability to effectively and efficiently cultivate microorganisms is critical to almost all microbiology laboratories. SAB is a relatively new defined media, composed of 29 different chemical compounds in varying concentrations, specifically designed to provide essential nutrients and increase growth of methanogenic archaea under anaerobic conditions. When compared to the widely used brain heart infusion media (BHI), an undefined media composed mostly of bovine brains and hearts, preliminary results indicated a 16.7% increase in growth of methanogens on SAB media. If SAB media is found to display a consistent and significant increase in methanogen growth, this may warrant the use of SAB media rather than BHI for further experiments involving the cultivation of methanogenic archaea. The use of a more suitable media such as SAB could potentially allow for more efficient isolation plating, and ultimately more consistent results. This study aims to collect additional samples of diluted methanogens smear plated on both SAB and BHI media. These plates can then be analyzed through microscopic plate counting or directly weighed to determine biomass. Methanogenic growth can then be quantified and analyzed, and a determination can be made as to which media, SAB or BHI, yields a greater amount of growth.

Abstract Code: P23

Presentation Type: Poster Presentation

Presenter(s): Aasish Pradhananga, Xeroxa Joshi, Kavindi M Wijesekara

Faculty Mentor(s): Bruce Jacobson

Husky Compact Dimension: Think Creatively and Critically

Title: Expression, Purification and Characterization of Cyclohexadienyl Dehydrogenase and Pyrroline-5-Carboxylate Reductase from Sinorhizobium meliloti

Abstract:
Cyclohexadienyl dehydrogenase belongs to the family of oxidoreductase enzyme which specifically acts on CH-CH group of donors with NAD+ or NADP+ as acceptor. It catalyzes the reaction where L-arogenate and NAD+ are used as substrate that forms NADH and CO2 along with L-tyrosine. This enzyme takes part in tyrosine synthesis and cathomycin biosynthesis. As of late, only one structure has been identified for this kind of enzyme.We are doing this research with collaboration to the New York Structural Genomics Research Collaboration. We are determining the kinetic parameters of the enzyme (km, Vmax and Kcat) and looking for the over expression of the protein in E.coli and purified using nickel affinity. Kinetics were determined by monitoring NADH disappearance. This work will provide a foundation for future structure/function studies including inhibition studies and site-directed mutagenesis.

Abstract Code: P24

Presentation Type: Poster Presentation

Presenter(s): Michael Shiferaw

Faculty Mentor(s): Christopher Kvaal

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: The role of Methylenediphosphonic acid in inhibiting Antibiotic resistance in E.coli though Horizontal Gene Transfer

Abstract:
Antibiotic resistant bacteria arose after the production of the first antibiotic, penicillin. Since then, there has been a growing number of bacteria that are resistant to one or more antibiotics. Each year 2.8 million people get infections that are antibiotic resistant where 35,000 people die in the U.S alone. The main mechanism by which these bacteria confer resistance is by transferring a mobile genetic material called plasmid which codes for resistance. Due to the short generation time for bacteria, the rate at which they share information is quite high, leading to a resistant strain of bacteria in a short period of time. One way this resistance is achieved is through horizontal gene transfer (HGT). HGT allows for a movement of a genetic material between two bacteria using the conjugative Pilli. A critical part of this process is a protein called relaxase which is a single strand DNA transesterase which makes a site and strand specific nick in the double stranded DNA. In this experiment, E.coli strain HB-101 and S17 are used to facilitate the transfer of ampicillin resistance plasmid pARO180. The S17 has the plasmids the confers resistance to ampicillin that is tested during this experiment. Methylenediphosphonic acid is used to competitively inhibit the function of the enzyme .

Abstract Code: P25

Presentation Type: Poster Presentation

Presenter(s): Marikathryn Wegeleben, Brandon Morris

Faculty Mentor(s): Felicia Leammukda

Husky Compact Dimension: Seek and Apply Knowledge

Title: Pairing Efficacy of Alternative Assignment in a High School Context

Abstract:
Comparing the Efficacy of Alternative Assignments in a High School Context . Our project will be an active, field research endeavor in a local High School Classroom, an elective anatomy class at Tech High School. Students are juniors and seniors of a variety of demographic backgrounds, with the majority being white female juniors & seniors.We will be comparing the efficacy of two alternative assignments among students whom otherwise share common background knowledge & educators. Efficacy will be measured based upon student information retention - assessed by a formative assessment subsequent to the application of the experimental assignment.The two assignments will be distributed among 3 classes in such a way that the total number of students in either experimental population are roughly identical. No controls will be put in place for demographic data, as to avoid complications for the teacher or school administration. These results will be compared to the results of a control population of students, those from the same teacher's class in the prior year who received what will be considered the "standard" assignment.The goal of this experiment will be to attempt to improve the quality of the delivery of this individual lesson. By extension, the researchers hope to gain some insight into the design of quality formative assessments which they will be able to put into practical application professionally.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: P26

Presentation Type: Poster Presentation

Presenter(s): Catherine Julius

Faculty Mentor(s): Felicia Leammukda

Husky Compact Dimension: Seek and Apply Knowledge

Title: Improving Classroom Behavior

Abstract:
I am working to improve behavior in my high school field experience classroom through positive behavior reinforcement. Using small rewards to call out students at the end of class who either improved from the day before or did something good in class I can help encourage better behavior in the classroom. Also making sure to call out good behavior over bad, is one of the other techniques being used. Over three weeks, I will use these things and keep record of the number of both good and bad behaviors I see in the classroom and see if the number of good goes up and the bad goes down.

Abstract Code: P27

Presentation Type: Poster Presentation

Presenter(s): Jacob Seifert, David Vasquez, Alvaro Robles Ramirez, Tommy Yang

Faculty Mentor(s): John Mirth

Husky Compact Dimension: Think Creatively and Critically

Title: Horizon Roofing AFS Module

Abstract:
Horizon roofing, a Minnesota based commercial roofing company, requires a design for an automated fastening system (AFS) module that will be capable of automatically feeding and correctly installing a multitude of roofing fastener systems. This module must also have the ability to be mounted to a future vehicle, which will house many modules in multiple patterns to increase the efficiency with which roofing fasteners are installed.

Abstract Code: P28

Presentation Type: Poster Presentation

Presenter(s): Pasang Lama Sherpa, Diya Shrestha, Sandhya Shrestha, Amirul Khondker

Faculty Mentor(s): Jieyu Wang

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Enhancing Learning Through AR Technology

Abstract:
"Augmented Reality technology expands the physical world; it adds layers of digital information onto what we can see with the naked eye. It augments our surrounding by adding sound, video, and graphics". Fourtané, S. (2019, April 25). The purpose of this project, and experiment has been to deeper understanding power of augmented reality. It can be used to create a better or enhanced learning experience with many capabilities that augmented reality and virtual reality can offer through programs such as Vuforia and Unity. Augmented Reality is already used in many platforms and cases today, but it is still in its beginning stages of use, and we are just starting to grasp the capabilities of it and the possibilities that it offers. We see it as offering more opportunities than just commercial use by showing that it can be implemented in schools and allow students to visualize materials instead of the traditional textbook format. Learning is a very important subject for children and us as human beings because it is necessary to foster a growth mentality among us and keep us advancing as a society. Augmented reality can help us by creating a visual learning environment that will allow students to better take in the material that they are learning and retain the information better. Today's students have already largely embraced technology in their own homes and in schools today as many schools are trying to cut down on paper and get more forms of tech into students' hands such as iPads, MacBook's and laptops. With all this technology in the hands of students, there is lots of possibility for many educational institutions to implement augmented reality into their learning curriculum and use it to benefit not only their students, but also their teacher's development in teaching.

Abstract Code: P29

Presentation Type: Poster Presentation

Presenter(s): Luke Henderson

Faculty Mentor(s): Gareth John, Mikhail Blinnikov

Husky Compact Dimension: Seek and Apply Knowledge

Title: Land Use, Watersheds and the Aquatic Health of Minnesota's Lakes

Abstract:
The state of Minnesota has a local culture of aquatic recreation on its many lakes. The health of a lake is important to both the local people and the creatures that inhabit that environment. This study will attempt to show the relationship between land use in lakesheds and the resulting ecological health of lakes. I will do this by employing GIS software to analyze data generated by several different government organizations. Biogeographical concepts such as energy flow, food web, and ecological niches will also be used to both understand results and acquire relevant data. This will answer my research question, addressing how land use in Minnesota lakesheds affects lake health.

Abstract Code: P30

Presentation Type: Poster Presentation

Presenter(s): Michael Penrod

Faculty Mentor(s): Rob Mann

Husky Compact Dimension: Seek and Apply Knowledge

Title: Protecting the Northwest Frontier 1861-1865: The Federal Military Post at Sauk Centre Minnesota

Abstract:
From 1861 to 1865 US Volunteer Troops garrisoned a line of forts stretching from the Iowa/MN border to Fort Ridgley, MN and north to Paynesville, Sauk Centre, Alexandria and west to Fort Abercrombie in the Dakota Territory. One of the key forts in this line was the federal military post at Sauk Centre. During the Summer of 2018 we attempted to locate the fort site. Our intent was to conduct a metal detector survey of the site. In doing so we hoped to determine, using relatively non-intrusive methods, whether artifacts and other physical evidence still existed that might help us actually locate the site and facilitate our understanding of the fort and the soldiers who garrisoned it. We did find physical evidence where we expected to find evidence of habitation on the site during the time the Army was there. Using the results of the metal detector surveys we were able to conduct targeted excavations the results of which confirmed our basic assumptions about the site.To facilitate our research, I received a grant from Sponsored Programs to participate in a National Park Service Program in the use of remote sensing in archaeology. This included employing metal detectors in fort sites. As a result of the grant I spent a week working with Park Service staff and other consultants learning how to conduct metal detector surveys and interpret the data collected. This experience helped me better understand the information gathered on the Sauk Centre Project.This project was the latest of several conducted by the CRM archaeology graduate program looking at sites related to the US-Dakota War of 1862.

Abstract Code: P31

Presentation Type: Poster Presentation

Presenter(s): Natalie Gottschalk

Faculty Mentor(s): Hien Studniski

Husky Compact Dimension: Communicate Effectively

Title: SCSU College of Liberal Arts Faculty Advising Guide 2020

Abstract:
This is a one stop resource for the College for Liberal Arts (CLA) faculty members at St. Cloud State University. The handbook's main purpose is to become a simple reference, with thorough instruction, for a variety of situations that faculty may encounter within their role of assisting students with advising. The SCSU College of Liberal Arts Faculty Advising Guide will aid in the faculty advisor's role of being the student's academic advocate by offering detailed information in various topics including but not limited to the (transfer) advising resources and process, graduation requirements and FAQ.

Abstract Code: P32

Presentation Type: Poster Presentation

Presenter(s): Alexander Seymour

Faculty Mentor(s): Jennifer Lamb

Husky Compact Dimension: Seek and Apply Knowledge

Title: Biofluorescence and Sexual Dichromatism in Frogs

Abstract:
Multimodal communication in anurans (frogs and toads) is an understudied field of behavior. During the mating season most communicate acoustically via calls and the vocal sac modifies audible aspects of those calls. Recent work suggests that vocal sacs may also be used to communicate visually. Many anurans change color during the breeding season (dynamic sexual dichromatism), but most studies of dichromatism have emphasized changes over the entire body rather than focus on the vocal sac. Further, they have only considered colors emitted under white light and not the potential for visual signals produced via biofluorescence. Biofluorescence occurs when an organism absorbs and emits light back into the environment at a longer wavelength, resulting in blue excitation light to be emitted as a green. Amphibians biofluoresce in response to ultra-violet and blue light but the surveys have been limited to documenting biofluorescence in these vertebrates and thus far none have focused on the potential for sexually dimorphic signaling. I propose to describe and quantify the potential visual signals communicated via the anuran vocal sac under different lighting conditions (i.e., white, ultra-violet, and blue light). I will survey several species from three families of anurans (Family Bufonidae, Hylidae, Ranidae) and will quantify the color, pattern, and light spectra emitted by the ventral surfaces of both sexes. I will sample populations during night surveys in the breeding season and document color and pattern in standardized photographs. This will be the first survey to test for biofluorescence in these species of anurans as well as the first to ask whether there may be visual, biofluorescent signals sent via the anuran vocal sac.

Abstract Code: P33

Presentation Type: Poster Presentation

Presenter(s): Erica Meyers

Faculty Mentor(s): Felicia Leammukda

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Student Motivation in a Science Classroom

Abstract:
During my field experience, I observe two general biology required courses taught by two different teachers. I plan to have each class complete a survey that provides feedback of their motivation level toward science. It is a global concern that less and less students are going into STEM related fields. I think this could be due to lack of motivation to learn science content. If a teacher adds motivational strategies to their lessons or classrooms (i.e. visuals), the students will become more interested in learning. Students often simply state "science is hard" and do not try to relate it to everyday life. Therefore, motivational strategies might include relating science content to their favorite crime shows, or their favorite hobbies. I want to incorporate real-world exploration to the classroom. Once my field experience time is done I will give the survey once more to see if there were any changes in the results.

Abstract Code: P34

Presentation Type: Poster Presentation

Presenter(s): Taesig Ahn, Paul Voeltz, Shei Sze Bong

Faculty Mentor(s): Abdullah Abu Hussein

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Automated CAPTCHA Solver using AWS Rekognition

Abstract:
CAPTCHA is short for Completely Automated Public Turing test to tell Computers and Human Apart. It is a program that generates challenges that are difficult for computer programs to pass but easy for humans to solve. CAPTCHA usually gives users simple task such as reading characters or digits from text images or listening to simple audios. The users will then have to type in what they hear or read, and the program will verify it. The text in the images are usually distorted or have some sort of noise. CAPTCHAs have many practical applications online. They are applied in blogs to prevent comment spam. They are used for online polls to prevent bots from voting so that it is fair. CAPTCHAs are most commonly used to prevent dictionary attacks with login credentials. We encounter this quite frequently when we enter the wrong password more than 3 times. This usually causes us to complete a CAPTCHA challenge to prove that we are not bots trying to crack a password. Developers are making it harder for machines to solve CAPTCHAs by adding more twist and turns and added more noise and random lines. But computers and artificial intelligence systems these days are learning to break CAPTCHA more effectively. In this project, we discuss the current state of CAPTCHA image solving software and develop our own application that utilizes Amazon's Rekognition software. Amazon Web Services (AWS) Rekognition is an Application Programing Interface (API) that analyzes images and videos with ease. Our research shows that there are ways to work around CAPTCHAs by implementing pre-existing intelligent software, effectively eliminating the added layer of security these tests present.

Abstract Code: P36

Presentation Type: Poster Presentation

Presenter(s): Brook Hoffman, Samantha Mills

Faculty Mentor(s): Katherine Pound

Husky Compact Dimension: Seek and Apply Knowledge

Title: Analysis of Sediment Core #1, Fire Station Storm water Pond, City of Blaine.

Abstract:
A sediment core from a storm water pond managed by the city of Blaine was collected and analyzed. The sediment type and thickness will be used to determine when the pond should be dredged and whether it needs to be placed in a hazardous waste dump.

Abstract Code: P37

Presentation Type: Poster Presentation

Presenter(s): Sidra Siddiqui

Faculty Mentor(s): Rachel Friedensen

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Student Programming in a Community College Setting

Abstract:
I work as the Graduate Intern for the Center for Experiential Education (CEE) at Normandale, which is an office that houses service learning, internships, and various other career related resources for students. I lead a program called Leadership Through Service (LTS), in which students who have first-generation college student backgrounds or some unmet financial need work closely in a cohort to volunteer on and off campus for approximately 40 hours per semester. In this presentation, I will go into more detail about what the program entails, goals and outcomes, and student evaluations about their experience in the program. I will discuss my experience leading a student program and the impacts that the student's time in service has made in their lives and community.

Abstract Code: P39

Presentation Type: Poster Presentation

Presenter(s): Tracy Gust

Faculty Mentor(s): Jennifer Jones

Husky Compact Dimension: Seek and Apply Knowledge

Title: Department of Campus Involvement (DCI) Summer Practicum Experience

Abstract:
During the summer of 2019, I was fortunate to work in the Department of Campus Involvement (DCI) as a graduate intern. The experience enabled me to fulfill a 150-hour practicum requirement for the Higher Education Administration M.S. program. As a result of this opportunity, I was able to learn more about my fields of interest (service learning and civic engagement) while providing event and administrative support to the department. I also gained experience with higher education assessment by compiling and analyzing the results of DCI student employee surveys that had been conducted throughout the previous academic year.I am grateful to my supervisor, Beth Knutson-Kolodzne, for creating a truly educational experience and encouraging me to learn from colleagues across campus. It confirmed that I had made the right decision to enroll in the Higher Education Administration program and pursue a new career path. Through my poster presentation, I am pleased to provide you with an overview of the Department of Campus Involvement and share some highlights of my practicum experience.

Abstract Code: P40

Presentation Type: Poster Presentation

Presenter(s): Elizabeth Fenske

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Think Creatively and Critically

Title: How Changes Happen: Research and Policy in Higher Education

Abstract:
The Postsecondary Child Care Grant was first established in Minnesota statute in 1989 136A.125. The Postsecondary Child Care Grants objective is to provide financial assistance to postsecondary students with financial need who require childcare assistance for their dependent children. Despite recent expanded eligibility and increases in award amounts the program continues to under spend. On average the Postsecondary Child Care Grant covered just 46% of actual child care costs incurred by the average student for the 2018 aid year while two million dollars went unspent in the program. State Grant data from 2018 shows 13,815 students with dependents were eligible for the MN State Grant. For the same year only 1,707 students (undergraduate) were awarded Postsecondary Child Care Grant. Looking for barriers to awarding more students a survey was created and was distributed to financial aid partners at current participating colleges and universities. The findings showed areas for improvement or change that included increasing awareness among student parents, clarifying county assistance restrictions, and expanding limit on time for which a student is eligible for the program. Recommendations for increasing awards based on the feedback received. The policy recommendation report be presented to the Minnesota legislature for consideration in the new biennium session which begins in February 2021.

Abstract Code: P42

Presentation Type: Poster Presentation

Presenter(s): Corey Young

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Persistence Through Involvement

Abstract:
Persistence through Involvement Student Life is a young department having been developed in 2012. In 2016, the Student Life department then combined with Career Development. Now in the third academic as a combined department it continues to grow and develop to meet the ever-changing needs of students. In its short tenure, the department has grown to manage student on-campus employment, internships, clubs, student senate, and a plethora of other supports for student to be engaged.Through my practicum experience, I was able to be a part of three different aspects of the department. I served as a student club advisor, supervised two groups of student workers both high school and college, as well as support the department in researching effective co-curricular engagement for African American students. Research shows that student involvement is directly tied to student success and persistence. Hennepin Technical College, just like many other institutions, have an educational gap between their non-students of color and students of color. The largest gap is between White and African American students. Understanding that this is an all college effort to attack this gap, Student Life and Career Development focused their work on persistence through student involvement. African American students make up a large percent of the population at HTC but are not the lead benefits in student clubs or on campus employment. Student Life and Career Development decided to conduct focus groups to understand how to effectively reach African American students and encourage these opportunities.

Abstract Code: P43

Presentation Type: Poster Presentation

Presenter(s): Michelle Stoner

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Expanding Campus-Wide Usage of EAB's Navigate

Abstract:
In completion of my practicum experience, I interned with SCSU's Advising and Student Transitions office, working with the Navigate Super Users team to expand my knowledge on the platform, EAB Navigate. I helped implement and conduct training sessions for faculty and staff on SCSU's campus on how to use the platform. By offering these one-hour trainings sessions, I was able to assist with the increase in number of users on the platform for the campus. The training sessions were offered to groups of people from across departments, as well as offered to departments when requested, for more individualized training. To prepare for the sessions, I created training guides to help users learn how to operate and complete actions in EAB's Navigate. These guides were made available to the faculty and staff for their continued use once in the platform. The training guides covered topics ranging from viewing a student's profile to creating and running a campaign for advising appointments. In addition to the training sessions and training guides, I attended biweekly meetings with the campus Super Users to expand my knowledge on what EAB Navigate can do and how it can help the university. In these meetings, I participated in problem-solving discussions and was part of decisions impacting our university's usage of the platform.

Abstract Code: P44

Presentation Type: Poster Presentation

Presenter(s): Fabiola Diaz

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Seek and Apply Knowledge

Title: Degrees When Due & Academic Advising

Abstract:
My practicum consisted of working on a project called Degrees When Due (DWD) in the department of Academic Advising at Anoka-Ramsey Community College (ARCC). This project emphasized working with students who may want to come back and complete their degrees. This is a part of a larger grant and system-wide initiative, where the Institutional Effectiveness had already identified students who may be good candidates to return to ARCC. The work consisted of training on how to run and read the Degree Auditing Reporting System (DARS) reports, reviewing transfer credits, matching different degree options, and contacting students. When contacting students, there needed to be an acknowledgment for their time and input in their past courses. Secondly, there needed to be a strategy to help students complete a degree; by checking for any holds, transfer credits from previous institutions, or giving them the support needed. Adding to this will be by putting them in connection with other departments, such as Financial Aid. The purpose of this project was to invite students to come back to complete their degree at ARCC.After completing the DWD project, I trained in the Academic Advising Department by shadowing advisor meetings to see different styles and approaches to advising students. Working evening shifts during quick stops meetings and advising students during orientation and registration.

Abstract Code: P45

Presentation Type: Poster Presentation

Presenter(s): Alex Halvorson

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Study Abroad Improvements in Terra Dotta

Abstract:
Terra Dotta is a software system used in higher education and specifically within the education abroad field. It helps students, parents and staff better receive and maintain essential information as it pertains to study abroad. As part of my practicum for the Higher Education Administration Master's Program, I worked for the Education Abroad office at St. Cloud State. I took new software updates from Terra Dotta and migrated that information to reflect the student experience on St. Cloud State's Education Abroad Terra Dotta interface. The result is a more efficient and clear website that allows students to navigate their initial research into studying abroad. Specific categories as they relate to each study abroad location include information about the program, the location, academics, financial expectations and a brief outline for the application process. This information will continue to need updates to reflect new programs, dates and deadlines, faculty leaders, cost, course changes or any change to program specifics.

Abstract Code: P46

Presentation Type: Poster Presentation

Presenter(s): Brandon Douglas

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Seek and Apply Knowledge

Title: Closing the Persistence Gap - An Observational Study

Abstract:
Research has consistently shown that students that hold historically marginalized identities face higher barriers when it comes to persistence to graduation. Minnesota - and higher education in general - is becoming more diverse, and campuses need new strategies to help recruit, retain, and persist students of diverse backgrounds to graduation. As part of Minnesota State's Equity 2030 plan, it is essential that campuses and partners work together to eliminate the educational equity gaps at every MinnState campus. In an effort to close the achievement gap at Winona State University, key stakeholders in the advising process - Academic Advising, Inclusion & Diversity, and TRiO Student Support Services - were asked to share how they help support students in advising and personal development conversations. The Inclusion & Diversity office was then used as a case study to track individual conversations and touchpoints with every student their office serves. The initial results have helped to shed light on the types of conversations and the quantity of conversations that staff in this office are having with students their program supports. The significance of this is that, through data collection and observation, early trends have been able to be identified as far as what is "best practice" in terms of the support students of various different marginalized populations need in order to help them persist at the Winona State campus. These preliminary trends will be examined in the coming year to form the basis of a model to help predict the likelihood of retention and persistence for students of various historically marginalized communities.

Abstract Code: P47

Presentation Type: Poster Presentation

Presenter(s): Jessica Bentley

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Communicate Effectively

Title: Marketing in Student Affairs

Abstract:
My practicum involved looking at the day to day tasks of a Dean of Students/Associate Vice President of Student Affairs. One of the projects that I was tasked with was helping some of the departments, that report to the Associate Vice President, build upon their marketing and print publications for their specific area. This included trying to integrate their print and digital marketing along with keeping the overall University's visual standards in mind.

Abstract Code: P48

Presentation Type: Poster Presentation

Presenter(s): Zaynab Elshershaby

Faculty Mentor(s): Steven McCullar

Husky Compact Dimension: Seek and Apply Knowledge

Title: Graduate Intern: Career Services Department

Abstract:
I am going to design a poster to share my experience while working at Augsburg University as a Career Coach in training in the Strommen Center For Meaningful Work, the Career Services Department on campus. In this poster I will share my three goals and why career services is important to understand from behind the scenes. I gained a lot of experiences in this position and the biggest one was rapport building with the students. My three practicum goals are as follows; gain comfort in critiquing student and alumni resumes, and cover letters, gain experience and confidence working one on one with students, and lastly to acknowledge my own weaknesses and work on improving them. One goal I would continue to work on even though my practicum has ended is acknowledging my weaknesses and continuing to improve them. During my time as a graduate intern in this department I was able to work and focus on my goals. I would like to share the importance of working in the career center and how anyone can apply these skills in other departments of higher education. Even though I most likely will not be pursuing a path in the careers department on campus, I can use the skills I have gained in my intern position in whatever department I end up working in. For the April 21st presentation of my practicum I will use a poster to share my experiences, goals and how I can use the skills I gained in my practicum in other departments such as academic advising or residence life or student life.

Abstract Code: P51

Presentation Type: Poster Presentation

Presenter(s): Meredith Penrod

Faculty Mentor(s): Jackie Bauer

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Career Centers on College Campuses and Online Outreach

Abstract:
Career Centers are important and vital offices in higher education institutions as an office that supports students and alumni in providing service to the community in job seeking, building interview skills, and support from student life to post graduate life. As universities continue to adapt and change with technologies developing which will lead to new and unique opportunities to reach out to a new group of students and communities, in outreach programs for online courses for students even those who may never set foot on an actual campus, allow those students to complete degrees at their own pace and not rush, and connect with long distance communities. The prospect of online degrees makes for new and exciting opportunities for development and connectivity. In this presentation a brief look at outreach, connectivity for online students' universities and a look at SCSU's career Center; What they do? Who does what task? And what the office will be doing in the future. Keywords: Career Centers, Outreach, nontraditional, Online students, Job seeking, Handshake.

Abstract Code: P53

Presentation Type: Poster Presentation

Presenter(s): Nevena Vasovic

Faculty Mentor(s): Jennifer Johnson

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: UCHOOSE: Collaborations that Cultivate Change

Abstract:
UChoose is St. Cloud State University's education-based prevention program that works on alcohol and drug-related issues and decrease of high-risk alcohol use. U-Choose is a dual program centered around BASICS (Brief Alcohol Screening and Intervention for College Students) for Tier I and Tier II prevention, development, and education of students. Through partnership with city of St. Cloud, St. Cloud Police Department, and St. Cloud State University we have developed laws and ordinances that clarify expectations for students' off campus, prohibits disorderly use of alcohol (intended for students drinking off-campus and potential issues), and restricts alcohol advertising. The collaboration has also resulted in Diversion/IMPACT program, a sanctioned programming for students referred for conduct action through City of St. Cloud, the City Attorney's office, St. Cloud Police Department, and Saint Cloud State University. The classes provide an opportunity to receive alcohol education and prevention strategies in lieu of a permanent citation and fine. IMPACT/Diversion classes all employ best practice data approaches. Each class incorporates theories of motivational interviewing, norms clarification, BASICS and psycho-education. The collaboration between our partners allows for change in overall environment for our students on and off campus. This presentation will address the roots of the collaboration, the needs that participated the partnership and overall journey from 2005 to today.Data collected since 2005 shows a 58% drop in the number of students who engaged in high-risk drinking, 44% DECREASE in average number of drinks consumed per week, and 58 % DECLINE in repeat violations (recidivism) of minor-consumption citations from 2010-17.

Abstract Code: P54

Presentation Type: Poster Presentation

Presenter(s): Hope Simon

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effects of Anorexia on Social Stress

Abstract:
Eating Disorders affect many people all over the world. While these disorders focus on an individual's perception of their body and of their habits with food and exercise, these disorders also impact other areas of their lives. From a chemistry standpoint eating disorders tend to have an affect on the neurotransmitters in the brian. With that in mind I intend to look at how the chemical imbalances in the brain of someone struggling with an eating disorder, specifically Anorexia Nervosa, impacts the social stress of an individual. Social stresses include one’s relationship with others, an individual's esteem, and one's sense of belonging in a group or in society.

Abstract Code: P55

Presentation Type: Poster Presentation

Presenter(s): Gwendolyn Desa

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Seek and Apply Knowledge

Title: GENDER DISPARITY IN SCIENTIFIC STUDIES AND CLINICAL DRUG TRIALS

Abstract:
AbstractIn the fields of biology and medicine, research on new drugs must be conducted on volunteer subjects to ensure that they are safe and effective to use on the general population. Most participants in clinical drug trials are men, and the majority of scientific research pertaining to the human body is done solely on men. Research conducted in this manner assumes that men indirectly represent the human population as a whole. However, men do not make up the entirety of humans, they make up 51.9%. The other 48.9%, women, are almost never used as subjects for medical testing. This is a problem because the anatomical differences in men and women can have major effects on drug and disease symptoms. Since research is not regularly conducted on women, these differences can go unnoticed. This paper will explore how underrepresentation in clinical trials has negatively affected women's health and propose a possible solution to improve the gender disparity in medical testing. Keywords: Gender, biology, medicine, clinical trials, gender disparity.

Abstract Code: P56

Presentation Type: Poster Presentation

Presenter(s): Phebie Rossi

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Perception of Gender and its Effect on Women in Medicine

Abstract:
Gender is defined in a multitude of ways, each varying by person and their life situation. People of different life circumstances and fields of interest all have their own definition of the word, and even when they define it at first, it is fluid and can change as they live their lives. Gender is defined in the Oxford dictionary as, “either of the two sexes (male and female).” While it may be taken at the face value of biological differences, sociologists take a deeper look at the meaning of the word. They propose that gender is not only affected by the biological differences between men and women, but also the environmental factors that alter the way the sexes live. Gender is believed to have an implication on every single facet of life, from childhood to education or from workforce to wage. As a result of gender and its implications, history has shown that women have been at a disadvantage in the workforce. Women have been believed to be inferior and kept out of any “dangerous”, “taxing”, or “intellect-driven” fields. According to many popular beliefs held throughout the history of the world, women are inferior to men and belong in the home. Making these ill-conceived prejudices quite apparent is the lack of female representation in the field of medicine up until the late 1800s. Women, who did most of the caregiving within the home, who were historically the medical workers with herbs and spices, were kept out of the realm of “real” medicine, because it was believed they could not do the job. Slowly, these perceptions of how gender affects a person’s ability to do a job have changed drastically. Within the last two hundred years, women have become a prominent force in the medical field. From being allowed into medical schools to now having their own practices as fully-fledged doctors, women’s presence on the front line of medicine has not only increased, but also altered the history of medicine, even as it is currently being written.

Abstract Code: P57

Presentation Type: Poster Presentation

Presenter(s): Zachariah Morgan-Grube

Faculty Mentor(s): Melissa Prescott, Sharon Cogdill

Husky Compact Dimension: Seek and Apply Knowledge

Title: Big Data, Politics, and your Privacy

Abstract:
In an age of technology and big data, there has been a pseudo “gold rush” for companies that make money from selling personal information most important to you! In this research note I will be evaluating how your personal data has been used historically, what the current state of big data and personal data security is at and lastly I will give my opinion on the classical debate of “privacy as collective good vs. privacy as an individual right”. In an effort to reach a wider audience and help people understand the pros/cons of big data; I will make an effort to give useful examples of how this information could affect YOUR life, and the lives of the people you love.

Abstract Code: P58

Presentation Type: Poster Presentation

Presenter(s): Hunter O'Hotto

Faculty Mentor(s): Geoffrey Tabakin, Marina Cetkovic-Cvrlje

Husky Compact Dimension: Seek and Apply Knowledge

Title: Mental Health of Genocide Survivors

Abstract:
It can be somewhat difficult to find an all-encompassing definition for the word genocide. Do we consider the separation of families on the United States border more recently as genocide? Or do we stick with the more traditional form of genocide in which a certain race is targeted and eliminated? In this research project, I will be primarily focused on the Rwandan genocide, which lasted approximately three months in 1994, and resulted in the deaths of an estimated 1,000,000 people. In particular, I will discuss how Rwandan genocide survivors were impacted psychologically. In this paper, I will discuss how the Rwandan genocide survivors were impacted by the horrific genocide in Rwanda and how they cope today from what they have experienced. I will cover the mental health of the Rwandan genocide survivors, such as Post Traumatic Stress Disorder (PTSD), anxiety, depression, and historical trauma. I will also discuss PTSD in survivors and also the history of PTSD in general, how it changes the brain chemistry in humans, and the ways that genocide survivors cope with the ongoing effects that impact them to this day.

Abstract Code: P59

Presentation Type: Poster Presentation

Presenter(s): Olivia Michals

Faculty Mentor(s): Michael Jeannot, Joseph Melcher

Husky Compact Dimension: Seek and Apply Knowledge

Title: Smokings Effect on Brain

Abstract:
In this research paper, I will investigate the effect that smoking nicotine has on behavior. This includes the chemical makeup up cigarettes and vapes, the mental process behind the behavior, and how the addictive habit changes behavior. This topic is especially relevant today given the popularity of vaping and other methods of smoking that have not yet been thoroughly researched. Such products are being sold on the market even though their long-term effects are not fully known. People know drugs are bad for their bodies, yet they choose to smoke. The initial choice to allow this addictive behavior to take over their life stemmed from somewhere. Drugs target primitive portions of the brain. This allows access to override cognitive processes in higher brain functioning, causing changes in behavior. People have the right to be well informed about what is happening inside their brain when they are choosing to smoke.

Abstract Code: P60

Presentation Type: Poster Presentation

Presenter(s): Daniel Moreno

Faculty Mentor(s): Mark Petzold

Husky Compact Dimension: Seek and Apply Knowledge

Title: Computer-Aided Design: The Revolution of the Future

Abstract:
The concept of Computer-Aided Design (CAD) is taking a more prominent role in today's technological advancements all over the world. From our vehicles to the phones in our hands, CAD has been a gateway to a significant number of ideas and innovations. CAD has allowed our society to redesign itself for the future. What if we could take this technology further? What if in the future, we would be able to touch what we design? This research project focuses on the history of Computer-Aided Design and the future of touch-based three-dimensional shape acquisition. If we focus on developing CAD technology to meet with our future standards, we will be able make impactful strides toward new ideas and advanced technologies. Based on this innovation, people will be able to interact with real and virtual objects to create enhanced designs in real time.Keywords: Computer-Aided Design; Augmented reality; Touch-based 3D

Abstract Code: P62

Presentation Type: Poster Presentation

Presenter(s): John Hilton

Faculty Mentor(s): Melissa Prescott, Plamen Miltenoff

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: How athletes use social media and how race effects the use

Abstract:
Athletes that play professional sports have been able to use social media to help gain more success in their respective sport. Many players have used their social media to call out their own team or their teammates. When players use social media like this, there is easy outlets for fake news to arise from. Players like Antonio Brown and Stefon Diggs have both recently used social media to voice their concerns. In doing this they actively called out their team or teammates in a negative connotation. Smaller media outlets can easily exaggerate the situation and make fake news out of it. When there are people that are checking to see updates on these players situation, they will come across the catchy fake news' and believe them. Race is seen as a role in this matter. Race can affect how these players say things and how ideas are created. The stereotypes that go with athletes and their race can be used in so many ways against them. These also can be tendencies that the players have, and it makes it easier to predict their decision making. Race can play a huge role in athletes social media use and more players are actively using social media to voice their opinions and the fight against fake news is always looming. There are many athletes and many situations to dig into and see how social media can be used as a weapon at athletes and for athletes.

Abstract Code: P63

Presentation Type: Poster Presentation

Presenter(s): Jun Lama, Neha Prajapati

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Think Creatively and Critically

Title: service quality in the hotel

Abstract:
The purpose of this paper is to understand why service quality is important in the hotel. The study aims to understand how the service quality of the hotel influence customer to stay in the hotel and how staff in the hotel can play an important role in providing quality service. A good hotel provides guests with excellent quality service, and the quality of service is considered to be the hotel's life. Some of the characteristics and practices of a good hotel business are the proper presentation and constant improvement of quality services that meet customer expectations.

Abstract Code: P64

Presentation Type: Poster Presentation

Presenter(s): Timothy Schermann

Faculty Mentor(s): Mary Clifford

Husky Compact Dimension: Seek and Apply Knowledge

Title: How dual or single parent households affect the likelihood of their children committing crime

Abstract:
Abstract The thesis is as follows, “the children of single parent households are more likely to be imprisoned compared to those children who live with a dual parent household.” This paper focuses on the relationship between single parent households and dual parent households and how they relate to the likelihood of their children committing crimes and being imprisoned. Then the paper will talk about the history and the changing demographic from regarding the downward trend of dual parent households and the rising trend of single parent households with information dating back to the 1950s. Then the paper will discuss some government programs that possibly incited parents to opt in to not join in marriage due to government policies that benefit single mothers. The paper will also focus on what type of economic status that the single and dual parent households are in. Then the paper will focus on the reasoning as to why children without either a mother or a father may be affected due to lack of the other parent in their life, and how that may encourage them to seek out that other parental figure in their life. Lastly, my paper and poster will present possible ways that could help reform whole families for the desired goal of decreasing crime rate among young adults and youth.

Abstract Code: P65

Presentation Type: Poster Presentation

Presenter(s): Mitchell Gabel

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: Ethics in Fishing

Abstract:
Most debates on ethical fisheries management, focusing on dramatic fishery collapses, have been incomplete concerning minority groups and the importance of fisheries to certain cultures. The privilege to fish, a conditional right often nefariously perceived as a legislated "right," implies ethical responsibilities linked to marine stewardship. To date, however, the privilege to fish has not been legally tethered to heavy responsibilities of businesses or governments when said organizations do not sustainably manage fisheries and conserve living marine resources. Legal rights and punishments must be coupled with moral responsibilities if governments, private fishing enterprises, and civil society are to conserve marine resources for present and future generations of all ethnic groups and cultures. A powerful social contract is necessary in order to have ethical fisheries that explicitly mandate collaborative governance and corporate responsibility that can and will protect public goods and society's right to fish, both to eat and to exist in the sea.

Abstract Code: P66

Presentation Type: Poster Presentation

Presenter(s): Macy Siharath

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: Resistance within Graffiti

Abstract:
My project is about how graffiti is a form of resistance.

Abstract Code: P67

Presentation Type: Poster Presentation

Presenter(s): Madison Audy

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: Poverty in Americas Education System and Its Effect of Childhood Development

Abstract:
Americas youth are being effected by poverty and the education system along with its effects on their development. Often times in areas where we see a rate of higher poverty the school system can reflect this. When children are in a community setting as such often times they can encounter several barriers not only in the beginning stage of their lives which are severely important for fundamental development. The effects are a wide rang and can have longterm effects on their development trough life.

Abstract Code: P68

Presentation Type: Poster Presentation

Presenter(s): Joannie Amaro

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Belief Behind Horoscopes & Zodiac Signs

Abstract:
Are horoscopes and zodiac signs something just something fun to read or could they mean something more? Looking into how horoscopes can be part of a tradition, society and in some cases, beliefs. In most cases, horoscopes are used to predict the present and future. Meanwhile, zodiac signs are given to each one of us by birth. This is determined by the placement of certain constellations at a specific time frame. For example, if one was born on August 2, their zodiac sign is, therefore, a Leo. The 12-zodiac signs each have their own personality and future. So, could this mean that being a certain zodiac sign shape your personality? For years it has been shown in several cultures that humans have been looking at the stars for some sort of divine answer. There is evidence that zodiac signs have to reach back to 3,200 BC. Some people who believe in horoscopes have argued that horoscopes are meant as a guide and shouldn't be taken literally. Meanwhile, others, see horoscopes are something interesting to read. Yet again, who is writing today's future and how are they doing it? If horoscopes and zodiac signs are something from the divine world, then this could lead to a bigger picture of faith and religion.

Abstract Code: P69

Presentation Type: Poster Presentation

Presenter(s): Sunny Moua

Faculty Mentor(s): Steve Anderson

Husky Compact Dimension: Seek and Apply Knowledge

Title: Video Games: More Than Their Stereotypes

Abstract:
Do video games hold any value than just immersive entertainment? Video games are largely perceived for their graphic imagery or unnecessary. But there are countless things in society that we take for granted every day. It just seems that video games are one of those.

Abstract Code: P70

Presentation Type: Poster Presentation

Presenter(s): Elise Kloeppner

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Where has the Presidential Impeachment process deviated from American Political Theory?

Abstract:
This paper will focus on how politics in practice differ from political theory, specializing in American politics. Looking at a few specific events in American political history, the impeachment trials of Johnson, Clinton, and Trump, and comparing it to political theory as developed by the American founders. Any presidential impeachment should first start in the house, where the two-thirds majority must vote on the articles to impeach, then it moves to the Senate where a trial is done, and again the two-thirds majority is needed to remove the sitting President from office. There are flaws in how specific things, such as being unbiased have come into question within the few events in American history impeachment was needed, and this paper will include what has been done about it, and how it has gone against what founders wrote.

Abstract Code: P71

Presentation Type: Poster Presentation

Presenter(s): Jordan Johnson

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: How do eating disorders affect the brain and body?

Abstract:
Eating disorders are mental disorders that either reduce intake of food or overeat. The most common eating disorders are anorexia nervosa, bulimia nervosa, and binge-eating disorder. Eating disorders are a mental illness that affects the not just the brain but also the body. Each of these three eating disorder as different effects on both the brain and body. The effects on the body can be as little as stomach pain to intestinal issues. The effects on the brain are very serious because with the lack of energy the brain does not get all its nutrients. If an eating disorder is not caught early, all these effects can cause lead up to death. The most effective treatment for an eating disorder is to go to therapy. These therapies help with healthy eating habits and how to gain more self-confidence. Someone with an eating disorder will live with it for the rest of their life, but with help they can live a very happy life.

Abstract Code: P72

Presentation Type: Poster Presentation

Presenter(s): Kathryn Grapatin

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Process and Effect of Semantic Feature Therapy on Stroke Patients

Abstract:
With an aging population, the importance of care for older adults is increasing at a rapid rate. Along with this older age often comes the loss of independence, as diseases affect our body in different way. One of the less thought of ways that people lose independence is by losing the ability to communicate through losing their voice or no longer being able to comprehend language. This may come from Parkinson's Disease or Alzheimer's or it can come from experiencing a stroke, which will be the focus of this research. Focusing mainly on the semantic feature therapy, and the effect it has on the Wernicke's and Broca's areas on the brain, I will research rehabilitation speech therapy for stroke patients. Stroke survivors typically struggle with aphasia, especially in the area of naming. Semantic feature therapy will focus on this, and be able to treat this area. Finally, Wernicke's and Broca's areas are the two areas of the brain that focus on speech, however the way treatment affects them can vary. There may also be variance in the way a stroke affects these areas. Finally, this research is crucial in today's age because the baby boomer generation, those born between 1946 and 1964, is growing and this result in a rapid increase in the number of people who need care. This increasing rate affects all health care providers, from nurses to speech language pathologist, so research in the field is growing and becoming more important. Through studies of the treatment, as well as analyses and review, I can analyze the effectiveness of this treatment.

Abstract Code: P73

Presentation Type: Poster Presentation

Presenter(s): Kayla Monson

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Racial Achievement Gap Across the United States

Abstract:
The purpose of my research paper is to try and see how the racial achievement gap differentiates in regions of the United States. I want to look at whites vs. minority races in parts of the Midwest, east, south, and west. I am going to look at populations of whites and minority students in schools, as well as their test scores and connect that back to the achievement gap. I hope to find patterns and areas of concern in my topic that could be changed to help reduce the racial achievement gap.

Abstract Code: P74

Presentation Type: Poster Presentation

Presenter(s): Paytin Carty

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Imposter Syndrome

Abstract:
The imposter syndrome, also known as the imposter phenomenon, is something I recently became aware of, and furthermore, it was something I definitely related to as a college student. It is not uncommon for students to struggle with the imposter phenomenon, especially when it comes to test taking. If you struggle with imposter syndrome, you may notice you have a lack of confidence, a lot of self- doubt, or even the fear of being an imposter. Even though imposter syndrome is not a mental condition, it can still have strong effects on us. My goal is to discover the ways college kids experience this phenomenon, but also how it is dealt with in our everyday lives.

Abstract Code: P75

Presentation Type: Poster Presentation

Presenter(s): Kaitlin Bender

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Think Creatively and Critically

Title: Public versus Private Education in Relation to Children with Autism

Abstract:
Public education negatively affects the behavior of children ages 5-9 who have autism due to lack of vital resources needed to accommodate to the specific needs of children with autism. One on one support is vital to improving behavioral deficits and accesses in children who have autism, but this type of support is not readily available at school. In this study, I reviewed the five public schools and five schools that were specifically made for children with autism. I further dove into researching classroom size, student to teacher ratio, resources within the school, and the funding provided from both public and private donors I found that one of the most vital parts of a child's experience at school is encompassed in the student to teacher ratio. A one on one student to teacher ratio dramatically improves the behavioral deficits and excesses that are inhibited by children with autism. These same improvements would not be found at a public school where the ratio is 45 to one. Ultimately, private education is better for children who have autism. Public schools oftentimes lack the necessary resources that will allow for children with autism to grow just as any other student in the public education system. This is not to denote public education, but when referring to children with autism a private education is detrimentally better.

Abstract Code: P76

Presentation Type: Poster Presentation

Presenter(s): Myles Kinney

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Why has the flat earth theory begun to rise in popularity since 2004?

Abstract:
The first source of the popular flat earth theory is the Bible, though most contemporary Christians have disavowed that belief. Since then, the theory has been revived and cast away by various groups. Scientists have proven that the earth is round many times through various means, but this theory has yet to be completely done away with. Though the Flat Earth Society only has around 500 members, it has been growing in popularity since 2004 and is still rising in numbers in the United States and has a very vocal group of supporters. Why is this the case? This research project will examine the scientific philosophical aspects of the theory and will the current practical beliefs behind the theory. It is very important to look at all of these aspects, as the scientific aspect may not be strong on its own, but it is significant to believers when taken with the other beliefs. the same is true of the practical beliefs as well, as most people see the idea that NASA has security guards on the edge of the earth as ludicrous, but all of the elements together are enough for flat-earthers. This is all in hopes of answering the question of why people believe in the theory.

Abstract Code: P77

Presentation Type: Poster Presentation

Presenter(s): McKenna Welk

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: How Socioeconomic Status of Students in Elementary School Impacts Their Education

Abstract:
The overseeing factor of the quality of education a student receives is his or her socioeconomic status. The socioeconomic status of a student affects the funding of schools and resources available to the student. External environmental factors directly related to socioeconomic status influence the education a student receives. Furthermore, intervention is of utmost importance for low-achieving students, but it may not be readily available to them for various reasons. In my paper, I will explore the reasons why intervention is not always available while also exploring any patterns that occur. I will analyze the influences that socioeconomic status has on the quality of education for elementary students as it pertains to reading ability.

Abstract Code: P78

Presentation Type: Poster Presentation

Presenter(s): Kendra Schlecht

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: How are those with a mental illness affected by law enforcement throughout the course of the criminal procedures process?

Abstract:
The criminal justice system is very complex in nature. Situations arise everyday among police officers, those in the community, and the criminal justice system itself that question the ethics of each and every decision. The mind itself is also very complex. The way people behave or react to certain situations is determined by how they perceive the situation, and those with a mental illness may comprehend a situation very differently from someone without an illness. When considering those with a mental illness, choices about what should be done can become an even more ethically challenging decision. Consequences from a quickly made decision occur constantly throughout our society, and these decisions can mean life or death. Throughout this research paper, one topic of importance is how police officers react and make choices involving a suspect with mental illnesses. Another aspect of this paper is how the criminal justice system proceeds with different treatments or punishments for those who do have a mental illness for different degrees of crime. The last point that is going to be explored is the ethics involved in decisions made by police during the process of apprehending someone with a mental illness who has committed a crime.

Abstract Code: P79

Presentation Type: Poster Presentation

Presenter(s): Envy Agbonkhese

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Rap therapy

Abstract:
The purpose of this paper is to understand what is rap therapy and the effictivness of this therapy on young African Americans. This paper will also look at the skills learned from rap therapy and how it effects the lives of the young African American children. Futhermore, this paper will look at what occurs during a rap therapy session while examining several studies that were done.

Abstract Code: P80

Presentation Type: Poster Presentation

Presenter(s): Trieste Schenk

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Relationship between Volunteering & Euthanasia in Animal Shelters

Abstract:
There are many factors that affect euthanasia in animal shelters, such as space, money, resources, and many more, but one factor specifically affects so many others. That factor is volunteers, but how exactly do volunteers affect euthanasia rates? Does having more volunteers mean less animals are euthanized? Do volunteers even make a difference? There are many more questions that one could ask, but that doesn't tell us why we're asking these questions or why they're important. So, why are these questions important? Well, I suppose that varies from person to person, but usually nobody likes the idea of putting an animal "down". To find the information in question, I will research statistics about volunteering in animal shelters, euthanasia rates in various locations, how the two concepts are related, and I will meet with a local animal shelter for present day, relevant information. I don't have any results currently, so stay tuned.

Abstract Code: P81

Presentation Type: Poster Presentation

Presenter(s): Kaeleigh Rainer

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Immunizations and the Development of Your Child

Abstract:
It is recommended by your doctors and the schools to have your child immunized. Many children are vaccinated each year, but failure to immunize your child could cause big health concerns later on and could affect their development. These health concerns can not only affect your child but other people with low immune systems in the community as well. The consequences that are stated in the news and on social media site are usually biased. Unfortunately, this is becoming a struggle for the medical community, because of the sudden outbreaks of diseases and the mutations it is causing more medical issues than expected. It is in the best interest of your child to make sure they are up to date on their shots. The consequences of illness could be more dangerous than the cons of getting your immunizations

Abstract Code: P82

Presentation Type: Poster Presentation

Presenter(s): Samantha Ricci

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: How Genocide Impacts Child Development

Abstract:
Every genocide kills thousands and scars even more. The intentional killing of a specific group of people results in violence, murder, individual PTSD, and the destruction of families and cultures. When thinking about genocide, it is easy to assume that the Holocaust is the only sound example. However, there are multiple other genocides that have impacted many different types of people throughout human history. This essay will look into one specific aspect of genocide that is far too often ignored: children of genocide. Children experience the violence of war and genocide weather people want them to or not; they become unintentional victims to the disgusting culture of war and the type of mindset it develops. This paper will discuss how the separation of families is a form of genocide in itself, as well as the mental toll that violence has on children compared to adults who experience the same things. Genocide is not a topic of the past; there are recent genocides that have influenced people who are still alive today, many who may have been children at the time they experienced such violence. Children's voices need to be heard in situations such as these, because they have no control over their environment and are impacted as such. How does exposure to the violence of genocide impact these children, their emotions, and their future relationships? This essay hopes to answer questions like these and shine light onto the child's experience during war and genocide.

Abstract Code: P83

Presentation Type: Poster Presentation

Presenter(s): Kendra Jenson

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Affects of War On Artists

Abstract:
Art is shaped by human experiences such as, spirituality, physicality, and emotional behavior. This is because artists are inspired and influenced by the world around them. When art historians look at work before the World Wars, artists were becoming more experimental. When the wars hit, the change in style started to pick up and artists weren't afraid to showcase their beliefs. There is a dramatic change in style around World War I from artists virtually everywhere. This war influenced many new art movements and methods of artistic expression. War affects everyone, but how does it affect artists and what they create? When looking at their work, experts can see what war means to these artists personally. It is another account of how war affects civilians of the world. These art movements are important to how we view art in modern contexts, and they contribute to different viewpoints. They also are important in looking at war as personal, individual matters rather than political ones. Providing this viewpoint creates a way of looking at these wars through a personal standpoint. War is not just about gaining power. This paper will examine the art movements that are heavily influenced by war and the artists who contributed.

Abstract Code: P84

Presentation Type: Poster Presentation

Presenter(s): Carlyn Frie

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: The effects of Borrelia burgadorferi on the body.

Abstract:
Ixodes scapularis (black-legged ticks) infected with Borrelia burgdorferi, the causative agent of Lyme disease, is endemic throughout the upper Midwest. Over the recent years, Lyme Disease has skyrocketed with the healthcare industry turning a blind eye. While there are numerous tick born illnesses, Borrelia burgadorferi is the best known and most prevalent in the Midwest. The effects that the pathogen Borrelia burgdorferi have on the body are commonly dismissed due to symptoms commonly being prevalent in other diseases, which is why Lyme Disease is such a hard disease to diagnose. Some of the common side effects of this disease are fever, rash, headache, and fatigue to just name a few. When first initially bitten with a tick infected with the pathogen, a common sign that you have contracted the disease is through a bulls eye rash that will appear due to the spirochetes manifested in the midgut of the tick. While this is common with a bite, it does not appear with every bite which can lead to serious health effects. If left undiagnosed, the effects to your health can be debilitating. Chronic Lyme Disease is caused by Lyme Disease going untreated and can lead to debilitating fatigue, muscle and joint pain, headaches, memory issues, irritability, and sleeplessness. This disease is passed on from ticks, specifically Ixodes scapularis (black-legged ticks). While ticks are the main way humans get this virus, there is a huge vector the disease must go through to get to the black-legged ticks. Ticks thrive in field, forest, and grassland settings due to the amount of hosts they have to feed off of. While deer can commonly be found in the forest setting they pass through fields and grasslands on a daily basis collecting and transferring ticks to and from. Borrelia burgdorferi travels through many different vectors; mice, deer, and humans. During the larva stage of life ticks commonly feed off of mice, who then become infected with Borrelia burgdorferi. This causes for a huge problem regarding the public's health, especially those who live in the Midwest.

Abstract Code: P85

Presentation Type: Poster Presentation

Presenter(s): Brandon Behsman

Faculty Mentor(s): Michael gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: Top financial decisions college students make that unknowingly affect their future financial success.

Abstract:
This paper relates the courses Accounting 291 and Honors 100 through research of financial problems college students are faced with because of poor choices on their part. Accounting 291 is based upon financial record keeping and Honors 100 contain wide-ranging topics relating to college students. Financial planning and possible ways to save money was one topic discussed in Honors 100. Keeping track of what you spend and where it is spent can provide places to cut unmeaningful spending. It is clear how different choices can impact ones'¬ lives in different ways; every day, week, and month colleges students are faced with choices. These choices affect both their short-term and long-term financial success. Top choices that affect their financial future are their decided major and school, taking a gap year or community college first, budgeting and food planning. Many college students do not know the impact of the smallest decisions they make. And when they are told how to save or change, they often zone-out because the material is too extensive. That is why saving needs to be taught in more layman's terms, a less sophisticated way for everyone to understand. If college students were to know the impact of the decisions they make, they might change them. Most college students struggle with basic financial literacy; so, teaching them would benefit them and our society greatly.

Abstract Code: P86

Presentation Type: Poster Presentation

Presenter(s): Cynestasia Mattheis

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Think Creatively and Critically

Title: Women of Shakespeare

Abstract:
Measure for Measure is to date one of William Shakespeare's most underrated plays, although in reality this dark and thrilling problem play is him at his absolute best. The central themes buried deep into Measure for Measure include: what vices are deemed criminal, what we are willing to sacrifice of ourselves for those we love, and the importance of morals and virtues, all of which are brilliantly challenged. This project will put it's focus specifically on the women who make this play. Isabella and Mariana test the limits of their own will, and both alone or in dialogue, they give compelling speeches to signify the roles women play, both on stages around the world, and in everyday life.

Abstract Code: P87

Presentation Type: Poster Presentation

Presenter(s): David Moreno

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: How does genocide relate to the concept of Human Relations and Ethnicity?

Abstract:
I want to find out what the concepts of genocide and Human Relations and Ethnicity are and how they all three concepts relate to each other. To find out how and why they relate to each other you need to know what the definitions are. Genocide is the deliberate killing of a large group of people, especially those of a particular ethnic group or nation. Human Relations relations with or between people, particularly the treatment of people in a professional context. This can apply to any person of a specific race. Ethnicity is the fact or state of belonging to a social group that has a common national or cultural tradition. My reason for doing this topic is to continue to explore how and why human relations and ethnicity are becoming common factors for genocidal acts around the world.

Abstract Code: P88

Presentation Type: Poster Presentation

Presenter(s): Michael Fischer

Faculty Mentor(s): Michael Gorman

Husky Compact Dimension: Seek and Apply Knowledge

Title: How the implementation of a lap time simulator would benefit the Husky Formula Racing Team?

Abstract:
A lap time simulator allows for Formula SAE teams to predict the outcome of designs before they build their car for competition for the year. This simulation takes in account the critical aspects of a car which is used in relevant equations to show computer models on the relationships between parameters and expected values around a given track. The expected results are compared to the actual data taken at a track once the car is complete to validate the simulator. Once the simulator is validated it can be a useful tool when in the design stages; allowing each sub team to explore how their specific area factors the outcome of the car. These are all things the Husky Formula Racing Team could benefit from using a lap time simulator. The implementation of a simulator would be just another added tool once it is constructed. This would improve their scores in competition and allow them to keep improving designs.

Abstract Code: P89

Presentation Type: Poster Presentation

Presenter(s): Jacob Hageman

Faculty Mentor(s): Melissa Prescott, Jason Eden

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Historical Events of Jesus' Crucifixion and Resurrection

Abstract:
Many scholars consider Jesus' crucifixion to be one of the most important events in human history, since its events have led to the birth of the world's largest religion and following. What people find controversial, and is one of societies greatest debates, is whether or not Jesus was resurrected from the dead. Historical evidence, along with primary sources such as eye witness accounts in records, detail Jesus' resurrection and events that follow his crucifixion on the cross. The main way that skeptics attempt to challenge Christianity is by disproving Jesus' resurrection. This research will negate skeptic views by bringing to light medical evidence, along with historical facts, that support Jesus' crucifixion and resurrection.

Abstract Code: P90

Presentation Type: Poster Presentation

Presenter(s): Sarah Huynh

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Seek and Apply Knowledge

Title: How has hip hop influences develop the modern society?

Abstract:
Hip hop is everywhere and can be anything. Hip hop could influence such as: consumerism, fashion, politics, music, art, dancing, communication and so much more. Hip hop can influence youth and develop what they become. The history dates to 100+ years ago in Africa and how it was brought to the United States and what was influenced to create a Hip hop culture

Abstract Code: P91

Presentation Type: Poster Presentation

Presenter(s): Madeline Johnson

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: I Don't (Exploration of child marriages in the Western world)

Abstract:
This paper explores the effects marriage has on the well-being of minors, as well as challenging the idea that child marriage only occurs in developing countries. As of 2020, California and Mississippi have no law regulating the legal age of marriage, with given parental consent. Similar laws in Western nations have led to thousands of adolescents being forced into legal marriages by their families before their 18th birthday. The ethics surrounding this topic continue to be debated, citing cultural or religious practices.

Abstract Code: P92

Presentation Type: Poster Presentation

Presenter(s): Evan Pallansch

Faculty Mentor(s): Melissa Prescott, Michael Gorman

Husky Compact Dimension: Think Creatively and Critically

Title: The Ottomans at Home and in the World

Abstract:
This paper will report on the influences of The Ottoman Empire through papers, reports, and other texts available online. This paper intends to broaden the perspective of the reader past common knowledge of the Ottoman Empire. The Ottoman Empire was a nation of great influence in its time but is often overlooked today. It was much more than just a member of the Central Powers in World War I. It is assumed by many that the Ottomans were an empire of conquest, and this has some truth, but how they got to be so powerful is sometimes forgotten. Most of their existence was spent behind their borders, trading. Their nearly 500-year long dominance over important trade routes shaped the world in more ways than one. The empire existed more than twice as long as the United States has so far. The Ottomans were indirectly responsible for Spain and Portugal's findings of the New World. They were connected to all corners of the world, most importantly Europe and China, connecting the East and the West. The paper will outline how the Ottomans shaped the world through trade and their mere existence.

Abstract Code: P93

Presentation Type: Poster Presentation

Presenter(s): Olivia Gomos

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Seek and Apply Knowledge

Title: How PTSD affects Speech.

Abstract:
Studies have found that people suffering with PTSD can have both physical and psychological consequences. PTSD or post-traumatic stress disorder is the outside influence of something traumatic on physical and mental development in both adults and children. Some of the most common cases of PTSD is found in soldiers returning from active duty. Although these cases are the most well-known, studies have also found cases of PTSD in children and adults. I want to focus on how PTSD can affect your speech both developmental and the speech you have already developed. I will be looking at the affects that PTSD has on your brain in general and how it can alter development. It's important for speech pathologists to learn about the effect of PTSD on the body because PTSD has been a disease that has continued to increase in the past hundred years. Since choosing to major in Communication Sciences and Disorders I've wanted to look at the effect of PTSD on human beings and the ways in can delay speech and speech development. I will be looking at a variety of different articles to examine the effects of PTSD on both adults and children of different backgrounds. As well as examining how PTSD could affect their life.

Abstract Code: P94

Presentation Type: Poster Presentation

Presenter(s): Emily Ramsey

Faculty Mentor(s): Melissa Prescott

Husky Compact Dimension: Think Creatively and Critically

Title: Communication Development and Humanities

Abstract:
The two classes being integrated in this project are Communication Studies 192 and English 198. This project is striving for the understanding of how the humanities and communication play off each other and how they are crucial for humans; it starts the learning and understanding for themselves, other people, and the world/cultures around us. The communication aspect will try to go into how we can foster communication development in infants and toddlers so they can have better skills in their relationships (with friends, partners, family, coworkers, etc.) and in their education (including reading/writing, math/science, etc. and the idea of Fixed vs. Growth mindset/learning). The other aspect of the paper will be about the humanities specifically theater and the effects certain plays have on our understanding of other people in the world around us. People need to know how other people work in their cultures/backgrounds and theatrical pieces that involve those topics are crucial for this type of learning. With both topics, I will try to connect the ideas and explain when we know how both can help people to learn more about others around them and how both play off each other and are critical aspects of our learning and development.

Abstract Code: P95

Presentation Type: Poster Presentation

Presenter(s): Nickolas Hoopingarner

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: T-cells and Immunosenescence in Humans

Abstract:
The immune system defends the body from invading pathogens like bacteria or viruses. It also attacks cancer cells and prevents it growing and spreading throughout the body. T-cells play an important role in the immune system. While aging, the T-cell function decreases. This is an important factor in immunosenescence. This process begins occurring at around nine months of age and goes through several phases of regression. It is still unclear as to why this process occurs and starts at such a young age and if there is a way to reverse or prevent it. To shed some light on T-cells and immunosenescence, scholarly articles were aggregated and analyzed. The results of research in this field could lead to new medicines and methods used to repair the immune system. This could also lead to ways to treat and prevent diseases like cancer. It could also help people live longer.

Abstract Code: P96

Presentation Type: Poster Presentation

Presenter(s): Katherine Erickson

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Safety for Equestrians in Jumping

Abstract:
Equestrians compete in one of the most dangerous sports because of the reliance on a live animal. Safety for this sport has only increased over the years, but there are still improvements to be made. With the new technologies available to the world, can we create a new standard in safety for these horses and riders that compete in jumping events? Throughout this study, I will look into the different protective gear offered for horse and rider combinations, how terrain can impact their safety overall, and how the difference in jumps can create a safer environment for horse and rider combinations. In recent years, there have been trials of jumps that are built to "break" once a certain pressure maximum is reached, thus ensuring more safety for the horse and rider combination. This study can shed light on the dangers of equestrian jumping/eventing and it can bring to light new opportunities for an increase in safety.

Abstract Code: P97

Presentation Type: Poster Presentation

Presenter(s): Amanda Voigt

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Analysis of Behavioral and Emotional Differences and their Connection to Students with English as a Second Language

Abstract:
Behavioral and emotional differences have long been the subject of varying opinions. These differences include, but are not limited to, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Dyslexia, Anxiety, Depression, and other learning disorders. Having these behavioral or emotional differences affects students greatly in the way they are able to learn, behave, and interact in school. Additionally, these differences are subject to different opinions from teachers, parents, and cultures. As an English speaker in an English school system, there is a level of privilege these students have. Students with English as a Second Language and who also have behavioral or emotional differences must overcome cultural differences first in order to fully receive the help they need in regards to their behavioral/ emotional differences. This puts a responsibility on teachers to become aware of each student. Acknowledgement of varying cultural, ethnical, and societal lifestyles are crucial to take into consideration when prescribing treatments and help for these students.

Abstract Code: P98

Presentation Type: Poster Presentation

Presenter(s): Maureen Schimnich

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Autism and the Ability to Critically Think

Abstract:
An estimate of 1 in 59 children in the United State are on the autism spectrum. Autism in a development disorder that affects an individual's ability to communicate and interact with others. Since children with autism are challenged in learning and communication, does it affect how they critically think? Over time technological advancements and learning techniques have been developed to improve their communication and learning. Could these techniques and technology be the solution to expanding their critical thinking skills?

Abstract Code: P99

Presentation Type: Poster Presentation

Presenter(s): Steven Cao

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Secrets to Success on YouTube

Abstract:
Social media has taken over our society and it is not going away anytime soon. YouTube is the second most popular social media platform after Facebook. The purpose of my research is to examine how content creators on YouTube can market their videos in such a competitive market to obtain views. With approximately 31 million YouTube channels, it is important to understand what the most successful YouTubers do to stand out from the rest of the competition. Marketing methods such as using search engine optimization, promoting videos on other social media, increasing ranking factors such as comments, likes/dislikes, and audience retention rate are major factors in a video being suggested by YouTube to viewers. YouTube's main goal is to keep viewers on its platform for as long as possible so it will only promote videos they think viewers will watch. Starting a YouTube channel has become increasingly difficult as the competition consistently grows bigger, so it is more important now than ever to know how to market videos as a content creator.

Abstract Code: P100

Presentation Type: Poster Presentation

Presenter(s): Gracie Elsenpeter

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Benefits of Nutritional Knowledge in High School Athletes

Abstract:
This paper reviews high school athlete's nutritional knowledge and the benefits of teenage athletes being knowledgeable about food. Nutritional knowledge can be an important aspect in all stages of life and may not be stressed enough for teenage students who are active in physical activity from extracurricular athletics. An individual's nutrition is based upon any health issues, age, gender, and physical activity. On average, the higher activity the more calories should be consumed. Basic nutrition is important in many aspects in youth's lives. School achievement as well as physical achievement can be impacted by eating habits. The macronutrients are especially important for individuals engaging in physical activity. Unfortunately, unhealthy eating is unknowingly supported in youth sports in various ways. Parents and coaches may not be as strict with the expectations of healthy eating because the young athletes are active and the adult's overestimate what that activity provides. Because of this overestimation, the right nutritional knowledge is not being obtained so they are not consciously thinking about what is being put in their body. Providing healthy foods and nutritional knowledge can help young athletes have healthier bodies and perform better in their athletics.

Abstract Code: P101

Presentation Type: Poster Presentation

Presenter(s): Jessica Nelson

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Women's Lack of Appetite in Films ans How it Affects Young Women

Abstract:
There is a significant gap in research on the number or women that are seen eating in film, and it's not something that is addressed even by the general public. Therefore, in this research essay not only will this be acknowledged, but it will be analyzed in the context of how it affects adolescent girls psychologically. Throughout the paper, there will be an analysis of popular movies among young girls and whether women are seen eating in them, then it will address the negative ways in which this affects teenage girls. Additionally, there will be an evaluation of just how influential these movies are on the young women watching them Furthermore, it will address whether the women's lack of appetite in these movies are intentional or just a cultural byproduct of our culture that values thinness over physical health, and if this phenomenon has worsened in the last 20 years. Studies have shown that disordered eating is extremely prevalent among this age group, but this paper would detail just how common it actually is, and how these movies contribute to the growing problem. Overall, the research essay will try to investigate just one of the many reasons why so many teenage girls have unhealthy ideas of eating and have developed eating disorders.

Abstract Code: P102

Presentation Type: Poster Presentation

Presenter(s): Gabrielle Imm

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: The Truth About the Effects of GMOs and the Stigma Around Them

Abstract:
There is a great deal of controversy surrounding the use of genetic engineering to create genetically modified organisms, or GMOs. The origin of this practice lies in the good intentions of scientists who made crops more nutritious and livestock more resistant to disease or pests; they utilized bacteria to mass produce certain proteins to be used in medicines. However, there may be something more sinister behind the advancements made in genetic engineering as well as some of the current uses of genetically engineered products. In making crops resistant to specific pesticides, they have created a monopoly that small farmers struggle to keep up with. There has also been a rise in the use of the term “organic,” which has helped create a negative stigma around GMOs in the minds of consumers, further impacting the economy of agriculture.

Abstract Code: P103

Presentation Type: Poster Presentation

Presenter(s): Teagan Watkins

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Climate Change in Literature, Entertainment, and the Media

Abstract:
Climate change has become a major issue in today's world, but it is hard to know if the exposure it is getting in the media is enough to make an impact on peoples' lives. Looking at novels, art, plays, movies, TV shows, newspapers, social media, and other forms of media, along with scientific evidence and peoples' reactions, hopefully it can be evident if climate change is getting the attention it needs worldwide. Analyzing book sales, movie and play tickets, TV ratings, social media post popularity, reviews and scholarly examination, we can hope to put numbers to what it means for climate change to have the public's attention. Will we find popularity among media focused on climate change? Will we find a lack of interest in this topic in modern entertainment? What sources are the best to discuss climate change in a way that will impact people's daily lives and hopefully gather support? If we can find a good source, or any source, that works for climate change exposure, hopefully we can use it to spread awareness, make changes, and grab attention from large corporations and governments to step up and do their part.

Abstract Code: P104

Presentation Type: Poster Presentation

Presenter(s): Brandon Nguyen

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Twitter trends and how they affect a person`s opinion on a new subject.

Abstract:
The main topic of this research is to try to find a correlation between a person's opinion and what the most agreed upon side social media sites like Twitter have taken. My goal is to see if Twitter trends specifically, can alter a person's opinion on a subject or influence their creation of an opinion. I do not have much info on this as I do not use social media as often as most people would, but the topic of how social media can influence the lives and events of others has always interested me. I have already done a bit of research and have found that social media does have a high influence, especially towards younger people, as it is the main source of news and information, even though that information can be heavily biased. Personally, I believe that social media, especially Twitter, can drastically influence the opinions of others in a quick way.

Abstract Code: P105

Presentation Type: Poster Presentation

Presenter(s): Kaya Inkster

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Art Therapy and Preventing Illness

Abstract:
For my research paper, I will focus on art therapy, as I plan to become an art therapist, and I am very interested in the impacts it can have on a person's livelihood. Because of this, I will research if the use of art therapy can decrease the risk of or help prevent health problems. My belief is that self-expression can be freeing and cathartic, but I am curious if this can affect a person in a deeper manner of speaking, such as if it can provide a person a greater resistance towards sicknesses because of the impact it has upon them. Mentally healing and coming to terms with trauma or unconventional experiences is highly important, but is it possible for it to allow a person to overcome and resist sicknesses and harmful behaviors like heavy drinking? Scientifically, how does the process of healing and expressing oneself creatively rewire the brain to do this? If this is possible, what kind of illnesses and behaviors can be prevented?

Abstract Code: P106

Presentation Type: Poster Presentation

Presenter(s): Macy Beeter

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effects of Radiation on the Body

Abstract:
When thinking about the effects of radiation on the body two thoughts occur, cancer and the bombing that took place in World War II. However, there is more to radiation than burns and hair-loss, effects such as widespread cell death and mutations are possible outcomes. In this research paper, I will discuss ionized radiation, the effects on the body, and how it influences generations of people. I will discuss whether humans can fully recover from these effects, and how medicine has improved to eliminate certain risks. I will also illustrate the critical role doses of radiation has in general health. In conclusion, this research paper aims to educate individuals on what radiation really does to the body, and how dangerous or beneficial it can be. As well as contrasting medical radiation to that used within nuclear plants and bombs to prove that they can be equally as dangerous but controlled through intentional doses.

Abstract Code: P107

Presentation Type: Poster Presentation

Presenter(s): Bionca Peterson

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: K-12 Bilingual Education in America

Abstract:
The U.S. is an astonishingly diverse country with people from all over the globe. Many people that come to the United States, be it to visit tourist attractions, family, or plan to settle down, are fluent in two or more languages. Many other countries offer or require bilingual education starting at primary school and often extending into college. Most U.S. native citizens do not have the ability to speak two languages. Unfortunately, Immersion schools are far and few between in the U.S. as there are countless benefits to being bilingual; it can be easier to travel, there are more career opportunities, increased academic performance, and it could lower your susceptibility for developing cognitive diseases such as dementia. Should the U.S. offer more bilingual education options for k-12 schools?

Abstract Code: P108

Presentation Type: Poster Presentation

Presenter(s): Calista Mezzapelle

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: How the Dietary Restrictions of the Abrahamic Religions Affect Athletic Performance

Abstract:
Nutrition is a key element for many athletes, as certain foods aid them in performance in their respective sport and keeps their bodies in an almost-perfect health condition. Many athletes follow strict diets that are designed for the specific sport they participate in (i.e. endurance vs strength). However, some athletes have dietary restrictions due to their religion, which could potentially affect how their diet is designed and their athletic performance. In the three Abrahamic religions (Judaism, Christianity, and Islam), there are specific dietary restrictions that believers must adhere to according to religious law. Jewish athletes remain kosher, which can make finding food that follow the laws of scripture a challenge. Sometimes these restrictions may include fasting due to a holiday in which fasting is observed. During Ramadan, a holy day for followers of Islam, athletes will participate in events while observing a fast from dawn until dusk. These restrictions may decrease the amount of protein intake or glucose levels of an athlete. Some athletes struggle to find the balance between honoring their respective religion's beliefs and maintaining a diet that will allow them to be successful athletes. Nutrition is a part of the foundation of a successful athlete outside of their physical activity, and religious beliefs can alter how a nutritional plan is developed.

Abstract Code: P109

Presentation Type: Poster Presentation

Presenter(s): Nathan Schmidt

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Prisoner Voting Rights

Abstract:
The topic of my research, is that of prisoner voting rights within the United States of America, or perhaps more accurately, the lack thereof. Within most states across the United States of America, the right to vote is not guaranteed, and quite often actively denied to prisoners in the U.S., even though the right to vote is a cornerstone of U.S. democratic processes. What further exacerbates this already controversial issue is the fact that not only are most prisoners denied the right to vote while incarcerated, but also after they have served their sentence. Reacquiring voter status is a timely and costly affair that many former prisoners often struggle to resolve. This is an issue that primarily affects African American communities within the United States, as black people constitute a disproportionately high percentage of the overall population of prisoners within the United States. The primary question I seek to answer with this project, is why this issue has not yet been alleviated or corrected, and a secondary question pertaining to this subject I also hope to answer, is what kind of political and/or racial factors might play a hand in preventing this issue from being corrected?

Abstract Code: P110

Presentation Type: Poster Presentation

Presenter(s): Erika Laho

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Using Immunotherapy to Improve Quality of Life in Cancer Patients

Abstract:
While some cancer patients are unaffected by the side effects of chemotherapy those that are suffer from constant physical pain from the cancer or the toxic drugs being administered. Regardless, both types of people feel the emotional pain of not knowing if they will survive past the life expectancy date they are given when they are diagnosed and the life expectancy of others with a similar prognosis. This results in an overall poor quality of life. However, this no longer must be the case. In 2018, James P. Allison and Tasuku Honjo introduced a concept to strengthen a patient's immune system and guide it to recognize the invading cancer cells itself. By altering T cells and allowing one's own immune system to attack cancerous cells some of the harsh side effects of chemotherapy can be eliminated or minimized. This treatment plan is known as immunotherapy. Further, by participating in immunotherapy the life expectancy is less known which allows cancer patients to focus on a high quality of life rather than how much longer they must live. Additionally, not only quality of life will be improved but also survival rates will increase particularly in skin and breast cancer where immunotherapy is known to be effective. By applying similar strategies to other types of cancer their survival rates will increase as well.

Abstract Code: P111

Presentation Type: Poster Presentation

Presenter(s): Alexy Dresel

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Pancreatic Cancer: Epigenetics and Inheritance

Abstract:
Pancreatic cancer is normally found in late stages and is very difficult to treat, which makes it interesting for further investigation. Throughout this literature review study, pancreatic cancer detections and treatments will be examined. Through the examination of the inheritance of the genes, and the patterns by which it gets passed down through generations, we can look at different ways the gene can be x-linked or autosomal. Another way of exploring pancreatic cancer is to examine the epigenetics of the genes, which is when the gene is expressed later in life. In retrospect, there may be environmental factors that can impact the probability of being diagnosed with pancreatic cancer. After reviewing current literature, I have found that pancreatic cancer is often linked to diabetes. I would recommend screening for pancreatic cancer in diabetes patients for future prevention. Screening for pancreatic cancer when diagnosed with diabetes can determine of it is strictly genetic or if there also there may be environmental factors contributing. Many resources are available to look at the new research and treatment of pancreatic cancer that will be helpful in this literature review study.

Abstract Code: P112

Presentation Type: Poster Presentation

Presenter(s): Emma Thoms-Warzecha

Faculty Mentor(s): Jennifer Quinlan

Husky Compact Dimension: Seek and Apply Knowledge

Title: Couples Therapy or Credit Counseling

Abstract:
Of all the reasons why couples divorce, the one that sticks out the most is their finances. While this may not relate as heavily to relationships as adultery or abuse, it statistically holds a substantial weight. Financial instability is a large stressor that can affect nearly everything in someone's life including their emotional and physical state. This is why many marriages would benefit more from seeing a credit counselor than a couples' therapist. A credit counselor could quickly lessen the amount of stress a couple endures by educating them on finances, creating an individual plan, and restructuring debt. Of course, there could be multiple reasons for divorce that credit counseling cannot solve, but it would still be beneficial as it speeds up the divorce process.

Abstract Code: P113

Presentation Type: Poster Presentation

Presenter(s): Sheniah Kallevig

Faculty Mentor(s): Mikhail Blinnikov

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Attitudes Surrounding Immigration in the Midst of Globalization

Abstract:
The purpose of this project is to analyze the extent in which opposition towards immigration is based on cultural isolation. Furthermore, the project analyzes whether or not continued globalization has incrementally pushed anti-immigration attitudes towards more pro-immigration attitudes with time. Those interviewed are asked to recall each decade of their lives to parallel the growth of globalization. Interviews with domestic European Americans from Central Minnesota offer a chronological overview of each individuals history in an attempt to pinpoint the root causes of their opposition towards and/or approval of immigration. Their exposure to differing cultures is the focus of this overview. Diversity within the individuals' daily lives are defined through data collected on the places they have called home, the schools they have attended, their places of employment, and their participation in culturally diverse extracurricular actives or outside hobbies. Additionally, these individuals' growing access to media throughout their lives is analyzed to see if exposure through media made an impact on their views. Finally, each international travel history is analyzed as the ultimate form of exposure to differing cultures. This project was approached with the hypothesis that those who have been introduced to people of differing cultures are more accepting of immigrants than those who have spent their lives in a cultural isolation.

Abstract Code: P114

Presentation Type: Poster Presentation

Presenter(s): Smita Khobragade

Faculty Mentor(s): Amanda Hemmesch, Jim Cottrill

Husky Compact Dimension: Seek and Apply Knowledge

Title: Public perceptions about dementia risk and prevention in Minnesota

Abstract:
We were interested in learning more about how the general population thinks about dementia and aging. We asked 400 Minnesotans the following questions: How much do you agree with the following statements: (1) Dementia is a normal part of aging (If people live long enough they will develop Dementia) (2) Doing brain-games and puzzles can protect people from developing Dementia. Both of these are myths, but were suspected to be widely believed by the general population. We analyzed the data to obtain a general view of how adults in Minnesota think about Dementia prevalence and prevention. We predicted that participants will be misinformed about dementia (they will agree with the incorrect statements provided), and that older and less educated adults will be more likely to agree with dementia myths than younger or better educated participants. Our data partially supports our hypotheses, and it is imperative that more efforts should be made to educate people, specifically older adults, that dementia is not a normal part of aging process. We also found that there was no significant difference between people with higher education and less educated people and their belief in dementia myths, which suggest that dementia specific awareness is lacking in the general population of Minnesota irrespective of their level of education.

Abstract Code: P115

Presentation Type: Poster Presentation

Presenter(s): Robin Le

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: The Correlation of Limited English Proficiency, State's Cultural, Political, Diversity and Pull-Push Factors Impact on The Vietnamese Settlement in United States

Abstract:
In this research project I am interested in finding the pull-push factors impacting the Vietnamese immigrant settlement across the United States. As such, I seek to identify the movement of Vietnamese immigrants in the United States according o each state's cultural/racial diversity, political and economic factors, and the state regulations on the English proficiency for licensing and jobs. To extend, I'll dig in more about the historical event, political and pull-push factors of the state, to see if the Vietnamese population concentration is based on these factors. My research question for this project are: 1: How does state's regulation and diversity affect the Vietnamese population settlement patterns throughout the U.S? 2: Is the increase/decrease of the Vietnamese population in certain states correlated to the English proficiency requirement by the state? 3: Has the Vietnamese population increased or decreased in red or blue states? Question 4: What combination of basic features (pull factors) must a state have in order to attract the Vietnamese immigrants there?

Abstract Code: P116

Presentation Type: Poster Presentation

Presenter(s): Smita Khobragade, Shukri Hassan

Faculty Mentor(s): Jamie Opper

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Psychophysical Method for Investigating Human Color Vision

Abstract:
The proposed project involves understanding and implementing properties of psychophysics in research on human color vision. Psychophysics is a field of research which investigates the relationship between physical stimuli and the corresponding response they generate within our sensory systems. This helps us study and quantify our own perception. It is important to study psychophysics in order to inform and combine with other sciences findings regarding "the innermost structure and functions of our nervous system" (Read, 2015). Using psychophysics, we can make connections and draw conclusions that can further our exploration of fundamental workings of our brain. Our research explores one such aspect of psychophysics: the 4 + 1 hue-naming method. The 4 + 1 hue-naming method refers to the mechanism by which the visual pathway perceives color by using the Red/Green and Yellow/Blue opponent mechanisms. The nervous system perceives the color of a stimulus detected by using spectrally-opponent neurons which are excited by some wavelengths of light and inhibited by others (Gordon, Abramov & Chan, 1977). The method used in our research involved asking the observer to denote the percentage of four elemental hues (red, yellow, green, and blue) comprising the stimulus that was shown to them without simultaneously using opponent hues; i. e., red and green, or blue and yellow. The observers were also asked to indicate the percentage of saturation present, to describe the proportion of chromatic (i. e., color) to achromatic (i. e., black/white) information. Hence the name 4 + 1: four elemental hues plus saturation. We then analyzed the data that was collected for stimuli presented to the fovea and the peripheral retina. In our research study, we learned how the procedure allows us to draw important conclusions about the physiological visual pathways that govern hue perception.

Abstract Code: P117

Presentation Type: Poster Presentation

Presenter(s): Sean Bresnahan

Faculty Mentor(s): Leslie Valdes

Husky Compact Dimension: Seek and Apply Knowledge

Title: Memory for People in Places

Abstract:
People tend to remember scenes as larger than they are, a phenomenon called boundary extension (Dickinson and Intraub, 2019). Studying scenes with faces in them against a background of flowers and having participants recall the images, we anticipate that boundary extension will occur. The faces will include both men and women to test if boundary extension is influenced by gender of the face. Participants studied 44 different portraits were used in each test, the first two and final two were the same for all participants as buffers. The images were shown for 5 seconds before changing. The 40 pictures differed between two versions: one zoomed in to focus on the face, and one zoomed out to include more of the background. Gender also was a factor, with both male and female models being used. Participants completed a color naming task after all the faces were shown. Afterwards, participants completed a recognition test to determine if they remembered the faces shown to them. It's expected that the participants will exhibit boundary extension of the images they were shown. For female models, we anticipate participants to remember the image as involving more of the body, implying a boundary extension. For male models, we anticipate that participants will remember more of the face, implying a boundary contraction. Implications for the theories of scene perception will be discussed.

Abstract Code: P118

Presentation Type: Poster Presentation

Presenter(s): Pa Ja Lee, Breanna Herbranson, Dorminga Assani, Chu Vang

Faculty Mentor(s): Matthew Vorell

Husky Compact Dimension: Think Creatively and Critically

Title: SlideUp

Abstract:
During our CMST 340 class, we were challenged to improve or redesign a product to learn the journey of how communication is used to create team experience with innovation being a priority. After forming teams, one of our members saw a photo posted on FaceBook of a male carrying multiple bags of groceries from his car to his home using a broomstick. He slid all the grocery bags onto the broomstick then carried them inside. We thought that there has to be a more effective way to do this due to the broomstick being very long and unmanageable and there was nothing to stop the bags from falling off the ends. We decided to improve upon one of the many existing designs for a grocery bag carrier. Throughout the class, we learned the importance of using communication techniques to create a positive climate while prioritizing innovation. The final product design that we settled on, named the SlideUP, is an ergonomic, multipurpose, and convenient grocery bag carrier. We addressed the key concerns that we had for carrying groceries in general, such as portability (one trip), cutting hand circulation, and having a free hand for our one trip warriors. During the prototyping phase of our product, we took specific features from existing grocery bag carrier designs and either improved on them or removed them; for example, we decided to improve handle materials for durability and toughness, while also cutting features such as retractable components and modularity. We also presented our prototypes to other students for real-time feedback. Simply, our purpose was to create an easier way to carry groceries as comfortably as possible, without sacrificing portability or handling. We believe that this product will be used by many people because everyone grocery shops. However, This class taught us the importance of cohesive group work by learning each other's strengths and weaknesses. Each person has a role in a team, but they're not tied to that role and must be flexible to help in areas they are needed. Our weakness can be other member's strengths and vice versa. Most importantly, we learned to add on to an idea to help create more creativity which led us to the invention of the SlideUp.

Abstract Code: P119

Presentation Type: Poster Presentation

Presenter(s): Abdulrahman Al-Sharabati

Faculty Mentor(s): Andrew Anda

Husky Compact Dimension: Think Creatively and Critically

Title: Extraction, Analysis, and Modification of Vehicle Firmware at Rest and in Transit

Abstract:
The automotive industry drives many industries around the world; largely, they rely on the automotive industry to transport its resources. The integrity of vehicles and their systems are critical for the safety of the resources and goods. As computer chips continue to get cheaper and more powerful, the industry continues to replace many mechanical parts in their vehicles with small computers, namely electronic control units (ECUs). ECUs usually communicate via the Controller Area Network (CAN) protocol and can be exploited to serve malicious purposes, such as posing as a legitimate ECU or assuming the identity of another ECU. For this project, our goal is to understand just how much control a malicious actor could gain over a vehicle with physical access and specialized tools to analyze firmware. Our testing environment is comprised of ECUs salvaged from a modern vehicle. For this specific portion of the project, we aim to extract and flash firmware images, reassemble communications databases using captured traffic logs, and emulate advanced attacks using firmware images. To retrieve and analyze data from ECUs, we utilize a variety of methods, both software and hardware-based. Some of the methods include Unified Diagnostic Service (UDS), existing traffic logs from a variety of vehicles, debug interfaces on the ECUs, and the pins of individual circuit chips. To aid our understanding of the traffic logs, we require specialized tools to map CAN messages to their source ECUs. Through our experiments, we discover that firmware tampering is definitely possible, but the barrier of entry is high enough to deter many potential saboteurs. Finally, we offer cryptography-based solutions that may be used to assure integrity of that data, whether that data is in transit or at rest.

Abstract Code: P120

Presentation Type: Poster Presentation

Presenter(s): Subeksha subedi

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Purification and Characterization of a Putative Adenylosuccinate Lyase (Toy F) Involved In Toyocamycin Production

Abstract:
The observed increase in bacteria resistant to a variety of antibiotics is starting to grow at an alarming rate and it poses a threat to humankind. This has led to a renewed interest in a variety of fields to discover and develop molecules with novel therapeutic mechanisms in order to combat these newly emerging strains of bacteria. Two molecules that show promise as novel antibiotics are Toyocamycin and Sangivamycin, which are produced by the bacteria Streptomyces rimosus. However, they are difficult molecules to synthesize in large quantities using standard synthetic approaches. An alternative approach to production of these molecules is using the enzymes from the organism. This chemoenzymatic approach has the main challenge of identifying the enzymes involved in the natural biosynthetic pathway of the metabolites. Early work by McCarty and Bandarian has identified a cluster of genes that encode putative enzymes proposed to carry out this synthesis in S. rimosus. The work presented in this poster focuses on the purification and functional characterization of the enzyme ToyF, which is a putative adenylosuccinate lyase. ToyF was shown to convert the substrate analog adenylosuccinate into AMP, which is consistent with its predicted function.

Abstract Code: P121

Presentation Type: Poster Presentation

Presenter(s): Mia Giorgi, Brooke Schlangen

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Determination of Phosphoribosyltransferase Enzymes Through Cloning, Expression, and Purification

Abstract:
The number of identified genes in organisms ranging from bacteria to humans has increased at a rapid rate since the discovery, optimization, and decreased cost of DNA sequencing techniques. The identification of gene sequences has dramatically outpaced functional characterization of the proteins that they encode, which has led to rapidly expanding databases (such as NCBI) containing protein sequences with putative functions that have yet to be confirmed. This lag in functional characterization/identification of the proteins compared to the identification of gene sequences has dramatically hindered understanding protein function in these organisms. The work presented in this poster was completed in order to explain the functions of hypothetical proteins in a class of enzymes known as the phosphoribosyltransferase (PRTase) family. Initially, three putative PRTases were selected, a putative hypoxantine-guanine PRTase from Oceanicaulis sp., a putative hypoxanthine PRTase from Nitrospinae bacterium, and an uracil PRTase from Cutibacterium acnes. We had a five-week plan of cloning the gene of interest into the vector pET28T to express the genes. The resulting clones were then sequenced to ensure the genes were correct in the plasmid. Next, the gene was expressed in Escherichia coli Rosetta-2 DE3 cells and the protein was purified. Once pure protein was obtained, we attempted to characterize the function of the protein using a variety of substrates. The reactions were monitored for product formation using high performance liquid chromatography (HPLC). Two of the three enzymes (the hypoxanthine-guanine PRTase and uracil PRTase) were successfully purified to >90% purity using sodium dodecylsulfate polyacrylamide gel electrophoresis (SDS-PAGE) and activity of the two enzymes is currently being tested.

Abstract Code: P122

Presentation Type: Poster Presentation

Presenter(s): Landon Kobluk, Chaz Cernohous-Schrader

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Kinetics of Cyclohexadienyl Dehydrogenase Resulting from a Serine to Cysteine Mutation in the Active Site

Abstract:
Sinorhizobium meliloti is a bacterium found in both soil and legumes. In soil, S. meliloti exists as an independent microorganism, but in legumes it partakes in a symbiotic relationship due to its nitrogen-fixating capabilities. Among its biosynthetic repertoire, S. meliloti is known to produce L-tyrosine through an oxidation of L-arogenate. This reaction is catalyzed by the enzyme cyclohexadienyl dehydrogenase. In this experiment, the sequence of cyclohexadienyl dehydrogenase was compared to other similar enzymes to determine which amino acids were conserved. Once these residues were identified, a single amino acid was chosen to be mutated to analyze the original residue's function. To aid in selection, the structure of the active site was visualized with PyMOL software. Serine 100 was selected due to its location within the active site and conservation among the majority of compared proteins. A primer was designed to mutate the serine into a cysteine utilizing site-directed mutagenesis. It was hypothesized that this change would affect the stability of the active site, inhibiting protein function. E. coli was used to synthesize the plasmid that was mutated using the designed primer. The recombinant protein was produced alongside a control. Both proteins were then purified in order to effectively analyze them. The mutated variant of cyclohexadienyl dehydrogenase was tested against the wild-type strain to determine the effect on function. Enzyme kinetics were used as the parameter for determining an increase or decrease in function. From here an assumption was made about the role of cysteine in the active site of cyclohexadienyl dehydrogenase, based on the change in function represented by a shift from a hydroxyl group, to a thiol group.

Abstract Code: P123

Presentation Type: Poster Presentation

Presenter(s): Nichole Erickson, Brigita Fiske

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Mutation to Function: A New World for Agriculture

Abstract:
Sinorhizobium meliloti, an alpha-proteobacterium that is closely related to plant and animal pathogens, is a bacterial symbiont of alfalfa that provides nitrogen in soils that may be deprived of that nutrient. Currently, the genome of S. meliloti has been analyzed, but its complete function is unknown. Better understanding of its symbiosis and its possible pathogenesis may allow development of better agriculture and ecosystem practices. Due to its conserved residues with the enzyme cyclohexadienyl dehydrogenase, it is proposed to play a role in small molecule metabolism, amino acid biosynthesis, and the formation 4-hydroxyphenylpyruvate and tyrosine. To test the function of this enzyme, site directed mutagenesis will be used to change a specific codon in the gene of interest. Plasmids will be isolated from Escherichia coli and engineered primers will be added to alter an amino acid in the sequence. Serine 100 will be transformed to alanine. Because the polar properties of serine may play a role in binding of the cofactor NADP+, this mutation is hypothesized to hinder its performance since alanine is non-polar and therefore would not have the same interactions. This particular site was chosen as it was shared among five homologous proteins, indicating possible importance. Kinetics will be completed with the original protein and with the modified protein to compare levels of activity. Decreased kinetic values will indicate that the mutated serine and its polar properties are vital to the function of the enzyme. Further research may help identify critical residues of this enzyme and thereby unveil its exact purpose.

Abstract Code: P124

Presentation Type: Poster Presentation

Presenter(s): Samantha Tschepen, Alec Hafferman

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Effects of pyrroline-5-carboxylate reductase mutation

Abstract:
The bacteria, Sinorhizobium meliloti, contains an enzyme, pyrroline-5-carboxylate reductase. The enzyme pyrroline-5-carboxylate from S. meliloti is proposed to function in the biosynthesis of L-proline. The gene was isolated from the genome of the organism and was cloned into a plasmid for recombinant expression in a common bacterium Escherichia coli. The amino acid sequence of similar enzymes' active sites were compared to see what they residues were conserved. Identical or highly conserved amino acids are more likely to play an important role in the enzyme's function. Proline-125 was found to be a common amino acid and was mutated to tyrosine to find if the proline-125 was significant for the enzyme's function. This was done by creating a DNA primer that contained the desired nucleotide sequence, which was subsequently used in a PCR based site directed mutagenesis experiment. E. coli were transformed with the resulting mutated plasmids. The plasmids containing the gene with the desired mutation will be expressed in E. coli and the protein was purified. Then, the enzyme activity and function was determined using enzyme kinetics.

Abstract Code: P125

Presentation Type: Poster Presentation

Presenter(s): Robert Anderson, Tylor Veldhuizen

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Transformation and Expression Gene Mutation in E.Coli

Abstract:
Proteins are composed of amino acids linked via peptide bonds in what is called a polypeptide. Some proteins play a role as biological catalysts otherwise referred to as enzymes. Multiple polypeptide chains interacting with one another is a determinant of the tertiary structure of these biological catalysts. The structure and function of enzymes is heavily dictated by the amino acid residues within the protein as well as the active site of the enzyme. Pyrroline-5-carboxylate (P5C) reductase is an example of an enzyme that catalyzes the reduction of 1-pyrroline-5-carboxylate (PCA) to L-proline. P5C reductase is needed for the production of proline, without the enzyme, amino acid starvation is possible potentially resulting in protein synthesis stopping. Most reactions that enzymes catalyze occur in the active site of the enzyme. To further understand the enzymes structure and function, the gene encoding the enzyme was mutated so that a variant of the enzyme could be produced. The mutated gene will be expressed in Escherichia coli and the variant enzyme where threonine-124 residue mutated to an alanine will be purified. The mutation of the threonine to an alanine results in the loss of a hydroxyl group that could potentially be important for enzyme function, which will be tested using enzyme kinetics.

Abstract Code: P126

Presentation Type: Poster Presentation

Presenter(s): Michael Shiferaw, Yimleng Xiong, Blake Wood

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: The effect of site directed mutagenessis of proline to glutamic acid on cyclohexadienyl dehydrogenase in E.coli.

Abstract:
The enzyme cyclohexadienyl dehydrogenase is mainly found in Sinorhizobium meliloti, a gram negative bacteria that has a symbiotic relationship with many legumes. It assists plants in fixing atmospheric nitrogen. The enzyme is encoded by the tyrC gene which is 882 nucleotides long. It has an oxidoreductase activity and functions as prephenate dehydrogenase or arogenate dehydrogenase in the synthesis of L-tyrosine. It catalyzes two analogous reactions: converts prephenate to 4-hydroxyphenylpyruvate and transforms L-arogenate to L-tyrosine. It utilizes NAD+ as a cosubstrate. In the this experiment the amino acid that was altered was proline 232 on the polypeptide chain. Since this proline was present in the other protein sequences, it was hypothesized to have some significance to the catalytic activity of the enzyme. The mutation was generated by taking a forward primer and reverse primer containing a specific nucleotide change in order to change the codon for proline into glutamic acid. The reason for is that proline is nonpolar while glutamic acid is polar with a negative charge. The difference in polarity may play a role in the substrate binding on the active site of the enzyme. If it does have an effect , it could indicate that the polarity of the proline is important in the amino acid sequence. The negative charge may also have an effect due to steric interactions. The effect of the mutation will be tested using a series of kinetic testing would help determine the rate, which may give insight on the effect the mutation has on the enzyme.

Abstract Code: P127

Presentation Type: Poster Presentation

Presenter(s): Amira Zaher, Charles Christen

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Effect of Single Amino Acid Mutation on Cyclohexadienyl Dehydrogenase Activity

Abstract:
The synthesis of essential amino acids is critical for organism survival. Amino acids can be nonpolar, uncharged, polar, charged, or aromatic. Histidine and tyrosine are aromatic amino acids that can be synthesized by cyclohexadienyl dehydrogenase. Cyclohexadienyl dehydrogenase is made up of 293 amino acids. Leucine 89 is a conserved nonpolar amino acid in cyclohexadienyl dehydrogenase within multiple organisms. However, the function of leucine 89 is not well studied. In this study leucine 89 is mutated into a negatively charged glutamate. Enzyme activity and kinetics will be evaluated in both the wild type and the mutant cyclohexadienyl dehydrogenase in order to determine the potential function of leucine 89. Changing Leucine 89 to glutamate will alter the tertiary structure of the enzyme due to the presence of a negative charge. Subsequently, catalytic efficiency will decrease due to potential misfolding that results from the disruption of the hydrophobic core caused by glutamate. Using site-directed mutagenesis the codon corresponding to residue 89 was changed from a leucine to glutamate. The resulting mutated gene was expressed in Escherichia coli and the protein was purified. Using spectrophotometry, the rate of reaction was measured, and the catalytic efficiency was determined and compared to the efficiency of the wild type cyclohexadienyl dehydrogenase. The findings of this study can be beneficial in understanding how the enzyme functions.

Abstract Code: P128

Presentation Type: Poster Presentation

Presenter(s): Tessa Gilson, Alexei Mikolchak

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Mutation of Sinorhizobium Meliloti 1021

Abstract:
The purpose of this lab is to work with an enzyme from an organism called Sinorhizobium meliloti 1021 which fixes the atmospheric nitrogen into a usable nitrogen source for plants. The enzyme of interest is proposed to catalyze the formation of L-proline from pyrroline-5-carboxylate. In this experiment, a single amino acid of the enzyme was changed into another by mutating a desired codon in the gene sequence. The selected codon was mutated from GCT to CCT which is Ala 212 to Pro 212 using a PCR based mutagenesis technique with DNA primers that were designed to contain the desire mutation. The reason why this amino acid was selected was because it was near the active site and Alanine is helix former and Proline is helix breaker. All the DNA sequence of all plasmids generated from mutagenesis were sequenced to confirm the incorporation of the mutation. The gene encoding the recombinant Pro212 variant of the enzyme will be expressed in Escherichia coli and the protein will be purified. The function of the variant will be tested with a kinetic assay monitoring the conversion of substrate to product.

Abstract Code: P129

Presentation Type: Poster Presentation

Presenter(s): Sabina Dhakal, Subeksha Subedi

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Characterization of a Point Mutation in Cyclohexadienyl Dehydrogenase for L-Tyrosinase Production

Abstract:
The purpose of this research project is to study protein function by introducing point mutation and studying the effects of the mutation. The gene that encodes for an enzyme called cyclohexadienyl dehydrogenase used in this study is from the bacterium Sinorhizobium meliloti. S. meliloti is a gram-negative bacterium found in root nodules of legumes, which fixes the atmospheric nitrogen and leaves excess nitrogen behind for the benefit of the plants.1 The protein of interest is hypothesized to catalyze the synthesis of L-tyrosine,2 a non-essential amino acid found in both plants and animals. Cyclohexadienyl dehydrogenase specifies prephenate dehydrogenase and arogenate dehydrogenase to L-tyrosine production using NAD+ cofactor.2 Synthesis of tyrosine is an oxidoreductase process. However, the catalytic mechanism of the enzyme from S. meliloti is not clear.2 The residue His-192 in the wild type gene sequence was mutated to Leu-192. This mutation was chosen because His-192 was observed to be unique in the multiple sequence alignment, and when the sequence and the structure of the enzyme was evaluated, His-192 was found in the active site of the enzyme in close proximity to tyrosine residue. So, His-192 was hypothesized to have an important role in the catalysis and by changing the His residue to Leu residue, effects on the enzyme catalysis is anticipated because of their differences in properties. Ligand-independent site directed mutagenesis was performed to create site-specific mutations in a gene of interest in the plasmid. The mutated gene will be expressed in Escherichia coli and purified. Enzyme kinetics can be performed to check the effectiveness of the mutation.

Abstract Code: P130

Presentation Type: Poster Presentation

Presenter(s): Shiva Sapkota, Kshitiz Wagle

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Direct Mutation of DNA: Transforming Pyrroline-5-Carboxylate Reductase

Abstract:
Pyrroline-5-Carboxylate reductase is an enzyme which is responsible for catalyzing the chemical reaction in which L-proline, in presence of NAD+ or NADP+ is converted to 1-pyrroline-5 carboxylate with production of NADH or NADPH and H+. This enzyme belongs to oxidoreductase family which targets donor CN group of the amino acid with NAD+ or NADP+ as acceptor by accepting the hydrogen from the amine group and resulting in the formation of active site for modification of the amino group. To observe how the enzyme change its structure and function when a codon for specific protein is altered, we carefully selected a site proline-76 and replaced it with serine-76 by making sure the unfolding temperature for its consecutive six amino acid sequence in either side is similar. In Escherichia coli the primer sequence/codon CCG codes for proline and TCG codes for serine. To induce the structural and functional change in enzyme activity, we mutated CCG codon with TCG code. We amplified our selected forward and reversed primer along with extracted e. coli plasmid DNA using Polymerase chain reaction and introduced mutated plasmid DNA to E. coli bacteria to study its phenotypical changes. Since we changed proline; a hydrophobic amino acid to serine; a nucleophilic amino acid in the enzyme sequence, we expect our transformed Pyrroline-5-Carboxylate reductase to behave differently.

Abstract Code: P131

Presentation Type: Poster Presentation

Presenter(s): Garrett Moran, Aasish Pradhananga

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: Study of Site-Directed Mutagenesis in Pyrroline-5-carboxylate Reductase

Abstract:
AbstractPyrroline-5-carboxylate reductase belongs to the family of oxidoreductase enzyme which catalyzes the oxidation of L- proline using NAD+ or NADP+ to form 1-pyrroline-5-carboxylate and NAD(P)H and H+. To observe the change in function and structure of the enzyme, site mutation was directed in the nucleotide sequence of a plasmid and the plasmid was reintroduced into the bacterium Escherichia coli for recombinant expression of the gene. Upon completing a multiple sequence alignment between pyrroline-5-carboxylate reductase and other similar enzymes in the NCBI database, it was found that glycine-178 was highly conserved. Glycine-178 was thought to be the active site of the enzyme, so it was chosen as a target and was mutated to a cysteine residue. Primer were designed with a change in nucleotide sequence to mutate the gene encoding the pyrroline-5-carboxylate reductase resulting in a cysteine residue replacing a glycine residue at position 178 in the protein sequence. The forward and reverse primer for site directed mutation were used to amplify the plasmid through Polymerase Chain Reaction (PCR). The goal of the lab is to create a change in the gene sequence that would result in a variation of the enzyme being expressed. The activity of the purified variant enzyme will then be tested to determine if glycine-178 plays a role in mechanism of pyrroline oxidation.

Abstract Code: P132

Presentation Type: Poster Presentation

Presenter(s): Justin Schroepfer, Kavindhi Wijesekara

Faculty Mentor(s): Nathan Bruender

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Generation and Analysis of Mutated T233 to E233 Pyrroline-5-Carboxylate Enzyme

Abstract:
The amino acid L-proline has an important role in the unique folding, structure, and stability of a protein. L-proline biosynthesis can occur in two ways, employing either Arginine or Glutamate. In either of these cases, the terminal step that converts pyrroline-5-carboxylate to L-proline using the cofactor NADPH is catalyzed by the enzyme pyrroline-5-carboxylate reductase, which is found in organisms all throughout nature. Study of a novel form of this enzyme found in nitrogen fixing bacteria Sinorhizobium meliloti through use of specific mutations may give better insight into the necessary structure and catalytic process associated with the enzyme. Phyre2 was used to predict the proteins structure and find similar proteins to it for the purpose of sequence alignment. Comparison of similar enzymes through protein sequence alignment showed a common amino acid residue of threonine. This polar amino acid (T233) was mutated to Glutamate as it was hypothesized that the charged amino acid would interact differently causing a change in structure and possibly function. Plasmid DNA containing the gene that encodes for pyrroline-5-carboxylate reductase isolated from the genome of nitrogen fixing bacteria Sinorhizobium meliloti was introduced into Escherichia-coli XL1-Blue cells for the purpose of plasmid amplification. Colonies containing the plasmids were grown and selected with use of antibiotics and purified through a miniprep procedure. Site directed mutagenesis of the gene that encodes for the enzyme was conducted and amplified through PCR before being purified through a 6xHis-tag affinity chromatography procedure with use of Ni ions. The resulting recombinant plasmid containing the gene of interest was expressed into protein. Kinetic experiments monitoring NADPH production in the catalyzed reaction were performed to obtain important kinetic parameters unique to the enzyme. An SDS-PAGE method was carried out to determine the size and quaternary structure of the protein. Comparison with a negative control in all experiments was used to compare the mutated form with the wild type enzyme.

Abstract Code: P133

Presentation Type: Poster Presentation

Presenter(s): Colton Tuve

Faculty Mentor(s): Ryan Fink

Husky Compact Dimension: Seek and Apply Knowledge

Title: Comparison of Antibiotic Properties between Pseudomonas aeruginosa and an Unknown Delftia Isolate

Abstract:
Antibiotics are a type of antimicrobial drug used in the treatment and prevention of bacterial infections. They work by either stopping bacteria from reproducing or destroying them, and not all antibiotics work on the same bacteria. Antibiotic resistance occurs when microbes gain the ability to resist antibiotics. Bacteria can also produce antimicrobial compounds which kill other bacteria, similar to an antibiotic. Through soil sample collection and the isolation, characterization, and 16s rDNA sequencing of unknown bacterial samples fall 2017 to spring 2019, a member of the genus Delftia was identified, with the species unknown. This unknown Delftia species presents similarly to Pseudomonas aeruginosa, so an evaluation of their antibiotic and antimicrobial properties was performed. This was done by using the Kirby Bauer method as a means of evaluation. The first objective was to test both bacteria against a set of antibiotic discs to look for resistance or susceptibility. The second objective was to test both bacteria against a set of tester strains of various bacteria. This allowed me to look for any antibiotic resistance and antimicrobial properties this unknown Delftia species and Pseudomonas aeruginosa both possess and if there is any correlation between the two. This also allowed me to better understand the different modes of action that different antibiotics utilize.

Abstract Code: P134

Presentation Type: Poster Presentation

Presenter(s): Krista Anderson

Faculty Mentor(s): Sarah Gibson, Matthew Davis

Husky Compact Dimension: Seek and Apply Knowledge

Title: Unusual dentition in the extinct fish Coccolepis (Osteichthyes: Actinopterygii) from the Jurassic Lyme-Regis region of Dorset, England

Abstract:
The genus Coccolepis is a rare and enigmatic extinct ray-finned fish (Actinopterygii) found in Jurassic and Cretaceous geologic marine and freshwater deposits from around the Earth. Much regarding Coccolepis remains understudied and poorly known, including its evolutionary history and relationships, biogeography, and diet and niche. Two fossil specimens on loan to St. Cloud State University preserve jaws and teeth of two possible species of Coccolepis. These jaws show unique dentition along the upper jaw margin, with teeth near the posterior section curving towards the front of the mouth, in contrast to most sharp teeth whose tips taper and curve posteriorly. This anteriorly-curved dentition is uncommon in fishes. Each specimen also display differences in the shape and size of the teeth present, as well as the shape of the maxilla bone, indicating that these are likely two distinct species. For this project, we examine and describe these unusual jaws and teeth, with the possibility of identifying them to a particular species or determining if they represent new species of Coccolepis. We also compare these teeth to similar dentition found in living fishes in hopes to better elucidate a potential diet, niche, and purpose for anteriorly curved teeth in the posterior portion of the jaw. By understanding the potential diet of Coccolepis, we may gain a better understanding of how fishes evolved and adapted to novel trophic niches that were opening up during the breakup of Pangaea and the changing planet.

Abstract Code: P136

Presentation Type: Poster Presentation

Presenter(s): Bailey Richards, Alexander Seymour

Faculty Mentor(s): Jennifer Lamb

Husky Compact Dimension: Seek and Apply Knowledge

Title: A Tad Confusing: Comparing the Morphology of True Frog Tadpoles (Family Ranidae)

Abstract:
The most species rich group of frogs in Minnesota is the “true frogs” in the Family Ranidae, including the Mink Frog (Lithobates septentrionalis), Green Frog (L. clamitans), American Bullfrog (L. catesbeianus), and Northern Leopard Frog (L. pipiens). These species are more difficult to distinguish between when they are tadpoles. The tadpoles of ranid frogs can sometimes be identified based on the aquatic habitats in which they are found, but the previously mentioned frogs often breed in the same kinds of permanent wetlands and they have overlapping geographic distributions. Tadpoles within the same genus are often identified to species based on the morphology of their mouth parts (called the oral disc) or on characteristics of their overall body shape (e.g., where the tailfin attaches to the body, tail fin depth, placement of the eyes on the body, degree of dorsoventral flattening). Some of these characters have been described for our four species of interest, but there is overlap and some traits are highly variable. As a result, we lack characters that can consistently be used to differentiate between some species (e.g., Mink and Green Frogs). The overarching goal of this project is to identify and describe multiple, morphological characteristics that can be used to distinguish among the tadpoles of the species mentioned above. To do this, we will collect each species of tadpole and describe within and among population variation by recording characteristics to distinguish each species (e.g., number and arrangement of tooth rows on the oral disc). When comparing different characteristics, I will also use univariateâ€¯statistics and geometric morphometrics to see if there are significant differences between species. Identifying species accurately will help answer other questions relevant to the fields of ecology and conservation.

Abstract Code: P138

Presentation Type: Poster Presentation

Presenter(s): Grant Studer, Michael Evers, Chris Hansen, Jordan Lindenfelser

Faculty Mentor(s): Eric Little

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Plastic Extrusion Machine for Production of Handwork Hardware, Double Pointed Knitting Needle Sorter and Gauge

Abstract:
The objective of this project is to design, fabricate, and test a machine, to be used in the manufacture of the Sorter Body component of the Handwork Hardware, Double Pointed Knitting Needle Sorter and Gauge. It was found that the most practical machine to do this is a plastic extrusion machine. The machine had to fit within a 100 square foot area, safe and intuitive for the operator, and must produce product satisfactory to the customer. The budget for the project is $800, with C4 Welding also donating raw materials. The extrusion machine is designed to take in raw ABS plastic pellets, which then run through the barrel which melts and pressurizes the plastic. The molten plastic is then pushed through a set of dies which give it it's shape. The extrusion is then passed through a cooling chamber, and finally the extrusion is cut into lengths to be further processed.

Abstract Code: P139

Presentation Type: Poster Presentation

Presenter(s): Johnathan Garcia, Tim Byman

Faculty Mentor(s): Kenneth Miller

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Formula SAE, Forced Induction Kit

Abstract:
The goal of the project is to increase the usable power of the engine by means of a turbo charger. The turbo charger will use energy from the exhaust to increase the air density entering the engine giving the engine the potential to use as much air as is possible to flow through the restrictor. An intake system will be designed and built to provide minimum pressure drop from inlet to outlet, even pressure distribution between cylinders, and ensure charge air temperatures remain at a reasonable level. An exhaust system will be designed that will not be restrictive and package nicely in the current chassis. A turbo charger will be chosen based off cost, performance, and availability. All components required for turbo charger operation will be designed to be compatible with the current chassis, requiring a minimum amount of work to install. The overall goal of the project is to increase the average power of the engine over the desired operating range of 6,000rpm to 10,000 rpm

Abstract Code: P140

Presentation Type: Poster Presentation

Presenter(s): Benedict Thoms-Warzecha, Nomindalai Bat-erdene

Faculty Mentor(s): Katherine Pound

Husky Compact Dimension: Seek and Apply Knowledge

Title: Analysis of Sediment Core #4 from the Fire Station Stormwater Pond, City of Blaine

Abstract:
A sediment core from a stormwater pond managed by the city of Blaine was collected and analyzed. The sediment type and thickness will be utilized to determine when the pond should be dredged as well as whether the pond's material needs to be placed in a hazardous waste dump.

Abstract Code: P141

Presentation Type: Poster Presentation

Presenter(s): Drew Fobbe

Faculty Mentor(s): John Sinko

Husky Compact Dimension: Seek and Apply Knowledge

Title: Laser Ablation of Space Debris

Abstract:
The primary objective of our experiment has been to see the effects of hitting different aluminum samples with lasers in a vacuum chamber.

Abstract Code: P142

Presentation Type: Poster Presentation

Presenter(s): Aquib Al Ahmed Immanuel

Faculty Mentor(s): John Sinko

Husky Compact Dimension: Think Creatively and Critically

Title: Laser Ablation of Aluminum by Varying Pulse Duration

Abstract:
Currently, there are hundreds of thousands of aluminum debris floating in outer space, which vary in size from 1-10cm. They can collide with satellites and future spacecrafts with high enough energies to destroy them. Using lasers to vaporize or de-orbit space debris is seen as a promising way of removing this hazard. However, the best method to remove aluminum is not yet known. This project will construct embedded systems (control circuits) designed to vary the timing and pulse shape of a high-power laser beam. The pulse duration of a laser beam should affect how much energy and force is imparted by the laser beam on an object. This project will investigate how changing the width of a high-power laser pulse affects the vaporization of aluminum. These data can be used to verify the viability of using high power pulsed lasers to remove space debris which are 20-50% aluminum. This project will apply electronic design methods to vary the width of a laser pulse from around a microsecond up to 100 microseconds. This project will also quantifiably determine how varying the width of a laser pulse changes the energy absorption, ablative force/ debris impulse, and consequently the energy cost to remove space debris. This research is novel in that laser pulses with width 1-100 microseconds were only used in a handful of previous cases (e.g., Lowder 1974, Apostol 1976, Shui 1978, Duzy 1980). This project will enable a connecting model to unify the past data with newly collected data.The goal of this project is to (phase 1) design and implement a system that can control the pulse width of a high energy laser and (phase 2) determine how varying the width of a laser pulse affects aluminum debris' vaporization. As an Electrical Engineering major, this project will provide opportunity to further explore the concepts of embedded systems. For example, ECE 323 Intro to Microprocessors, ECE 421 Computer Architecture and Design, ECE 422 Microcontrollers System Design, ECE 314 Digital Electronics, ECE 316 Analog Electronics and ECE 301 Signals and Systems all relate to this project due to the need for electronic control of lasers. This project will provide hands-on research and scientific writing experience and skill in topics not addressed in Electrical Engineering courses, such as working with lasers and optical equipment which are valued professional experience.The objectives are:1. Conduct literature review on laser ablation research with microsecond timing. 2. Build control circuit to generate a voltage pulse of duration 1-100 microseconds.3. Design switching mechanism for high voltage power supply for controlling laser pulse. 4. Prepare (polish) a set of aluminum targets to be used for testing.5. Test mass removed by aluminum vaporization for laser pulses of 1- 100 microseconds duration.6. Compare the data collected with literature data. 7. Communicate results in a final report, the Spring 2020 Huskies Showcase.

Abstract Code: P143

Presentation Type: Poster Presentation

Presenter(s): Gadeir Ali

Faculty Mentor(s): Kannan Sivaprakasam

Husky Compact Dimension: Seek and Apply Knowledge

Title: Understanding the relationship between spectroscopic and mechanical properties of Graphene-Polymer Composites

Abstract:
My project will contain factual information on the relationship between spectroscopic and mechanical properties of Graphene- Polymer Composites. Graphene is a single atom thick sheet of carbon that has definitely drawn interest because of its novel, mechanical, electrical and thermal properties. These properties can be used in Aerospace, Biomedical, electronics, flexible wearable sensors applications . The following Activities should help us bring our attention to our main goal; Synthesizing the composition of:- Graphene-polyethylene Composites - Graphene-Polystyrene composites would be made -Hardness (mechanical Properties of the composites would be measured - The results of these studies would be helpful in understanding the key linkage between macroscopic behavior of materials and the molecular level of information as obtained by spectroscopic methods.

Abstract Code: P145

Presentation Type: Poster Presentation

Presenter(s): Kyle Cielinski, Madelin Dammann, Maverick Carlson, Darien Prow

Faculty Mentor(s): Nancy Sundheim

Husky Compact Dimension: Seek and Apply Knowledge

Title: American Axle and Manufacturing Senior Capstone Project - M.E.T.

Abstract:
For our senior capstone project in manufacturing engineering technology, we partnered up with local foundry American Axle and Manufacturing to work on automating a tough post processing operation. The original operation goes as follows: cast automotive parts are broken apart from large casting trees into their individual parts, but still have unwanted sprues, risers, and runners attached. They then go to a manual workstation where a worker must separate each unwanted piece of scrap metal with a hydraulic wedging tool. At this point the metal is still scalding hot, and there is a high rate of injury and turnover in this workstation. Our solution aims to alleviate this process, which has been described as the worst operation in the whole casting process. Our suggested solution involves a secondary, automated line. The work process on this secondary line is as follows: parts are re-directed from the main line onto the secondary line via actuating arm. The parts are manually loaded into a jig, which holds the part in place while they ride a conveyor into a robotic workstation, where a robotic arm with the previously mentioned wedging tool removes unwanted scrap from the work piece. The parts are unloaded from the jigs and returned to the main process line. Our presentation be in the form of a poster, with physical visual aids on a table.

Abstract Code: P146

Presentation Type: Poster Presentation

Presenter(s): Susan Tiwari, Avishek Koiraka

Faculty Mentor(s): Timothy Vogt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Microscopic Thermal Imaging

Abstract:
The goal of our research activity is to do a failure analysis of integrated circuits by building a cost-effective microscopic thermal imager that will allow users to measure the heat distribution of electronic devices of size 200 um x 200 um to 1-inch x 1 inch. Temperature variations across objects will allow a user to measure the temperature of electronic components. The system will be helpful to find overheated and/or defective components which may lead to problem detection and modification of components. It is difficult to find out thermal issues with electronic circuits by physical contact methods because of decreasing size. Microscopic thermal imaging using infrared thermography doesn't require contact with circuits to get temperature variation across components making it one of the best choices for thermal analysis of electronic components in integrated circuits.

Abstract Code: P147

Presentation Type: Poster Presentation

Presenter(s): Aquib Al Ahmed Immanuel, Suman Silwan, Asif Raza

Faculty Mentor(s): Timothy Vogt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Printing Electronic Circuits Using Direct Write UV-Photolithography

Abstract:
The word 'lithography' was derived from Ancient Greek where 'lithos' means stones and 'graphein' means to write. It is a printing process that involves printing on a stone or a metal block on which image has been drawn with a thick substance that attracts inks. It is also the process of transferring geometric patterns on a mask to a smooth surface. In our case, photolithography also known as optical lithography or UV lithography uses light to transfer a geometric pattern to a photosensitive layer as needed. Those geometric patterns are to be generated from different files that includes formats like bitmap (a raster graphics image file) and gerber (a 2D binary vector image file). The bitmap files contains values of pixels while the gerber format is the standard format used by printed circuit board (PCB) industry to describe the printed circuit board images. These geometric patterns are generated using a computer numerical control machine that uses stepper motors to control the dimensions of those geometric patterns with additional photolithography and drilling capacity on it. Printing circuits on pcbs using photo-lithography is a very useful technology that many academics and researchers need in their work. The machines that are available on the market are generally very expensive. The controls required to print circuits using photolithography are available in cheap 3d printing kits ($150-$500) available in the present market for very low prices. The main motivation behind this project is to repurpose the parts of 3d printing kit to make a photo-lithography platform that can be much cheaper than similar systems on the market.

Abstract Code: P148

Presentation Type: Poster Presentation

Presenter(s): Nathanael Przybilla, Tyler Priem, Matthew Kjos

Faculty Mentor(s): Yongli Zhao

Husky Compact Dimension: Think Creatively and Critically

Title: Silent Drive Kerosene Forced Air Heater

Abstract:
Pinnacle Climate Technologies currently offers a “Silent Drive” (SDR) heater; however, multiple problems have arisen with the current design. This included charcoal or soot buildup within the burn chamber, flame leaving the burn chamber, and an inefficient combustion process. A redesign of the heater is necessary to have the product running reliable, quiet, and efficiently. Once the heater has a reliable design, optimization of the air-fuel mixture and flame pattern will be performed on ANSYS Fluent as well as lab testing to better understand the fluid dynamics of the heater. Using ANSYS Fluent, a new design proposal will be provided to Pinnacle Climate Technologies. Along with redesigning, Pinnacle Climate Technologies has an interest in understanding the effects of various fuel viscosity levels on emissions as well as BTU output. For cold starts when running the heater using diesel, a fuel preheater will be used to aid the startup. If the emissions are improved with an increase in temperature, the fuel line can then be run in direct contact with the burn chamber for a certain length to preheat the fuel further to a desired temperature. It is desired to determine the optimum fuel temperature for the combustion process.

Abstract Code: P149

Presentation Type: Poster Presentation

Presenter(s): Omar Shukri

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Facial Recognition for Attendance

Abstract:
"A facial recognition system is a technology capable of identifying or verifying a person from a digital image or a video frame from a video source. There are quite a few methods in which facial recognition systems work, by comparing selected facial features from given image with faces within a database". In the standard attendance system there are few issues like another student signs -in a student that is not in class, and tracking down which student is present can lead to wasteful time consumption. Attendance is a key factor for both the student as well as the teacher in an educational organization. The advancement of technology we can detect the attendance performance of the students and maintains a record of the data. In recent years, facial Recognition technology has increased dramatically in popularity and we have seen incorporation into Mainstream platforms. My goal for this paper is to provide a strong and sound argument for the use of facial recognition for attendance tracking purposes, specifically in educational institutions. Providing a complete understanding of facial recognition technology and its specific uses in modern society. By establishing a solid background in old technology and the new ones, I will cover the use and implementation of facial recognition for attendance tracking purposes.

Abstract Code: P150

Presentation Type: Poster Presentation

Presenter(s): Ahmed Noor

Faculty Mentor(s): Mark Schmidt

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: 3D Printing on Car or Vehicle Part

Abstract:
3D Printing on Car or Vehicle Part3D printers are the process through which physical objects are created from a 3D CAD model. Some of the vehicles nowadays are 3D printed, but some people may not be aware of this. The primary purpose of this research project is to teach people how some of the vehicles are 3D printed. I will be doing a real live experiment on the junk part of a car or my car and show the people how some of the most famous cars are 3D printed. 3D printers are usually faster, more affordable, and easier to use than other manufacturing technologies. In addition to that, 3D Printers enable you to produce complex shapes using less material than traditional manufacturing methods.Moreover, 3D printers can be used for both business purposes and as a hobby. The primary objective is to create items with only minimal material used. The objects are created by a process through which several thin layers of material are laid down successfully. However, 3D printers are printed today on some of the most expensive cars, but people are not aware of this. So we have to teach others who don’t know the importance of 3D printing on cars or vehicles.

Abstract Code: P151

Presentation Type: Poster Presentation

Presenter(s): Jessica Orr, Sarah Malinowski, Mohamed Shiyam, Mohamed Arafath

Faculty Mentor(s): Steven Covey

Husky Compact Dimension: Think Creatively and Critically

Title: 3M Production Automation

Abstract:
The purpose of this project was to determine a space efficient, clean, & effective way to transport a single product from a stack to a predetermined location for processing and part application. The first semester focused on ideation and developing a proposal. The proposal comprised of a background and objective followed by five concepts each with a detailed description, bill of materials, budget, pros and cons, CAD models, & floor plans. A decision matrix was used to determine the team's concept recommendation to 3M. The second semester provided the opportunity of more hands-on work with quick prototyping. The purpose of the prototype was to provide a proof of concept of a hand-driven device that transported a single product from a stack onto a predetermined work surface. The team learned about pneumatic systems, the effects of porosity, designing for reliable performance, and structural integrity. The final deliverable will provide 3M with an ergonomic solution that will be implemented to the production line in the near future.

Abstract Code: P152

Presentation Type: Poster Presentation

Presenter(s): Nicole Gammel, Joey Melser

Faculty Mentor(s): Katherine Pound

Husky Compact Dimension: Seek and Apply Knowledge

Title: Blast of the Bottom! Analysis of Core Sample #2

Abstract:
Went to Blaine MN, and got a core sediment sample from the bottom of a stormwater drainage pond behind their fire station to analyze. As a class we took multiple samples and will likely be comparing data from multiple locations within the pond as to what types of sediment, organic materials, and man made debris it may contain. The goal is to decide whether the bottom of the drainage pond contains mainly natural materials or if there is anything hazardous to the environment or local community giving cause for dreading the area.

Abstract Code: P153

Presentation Type: Poster Presentation

Presenter(s): Jacob Debelak, Keith Korsmo, Kenneth Christenson

Faculty Mentor(s): Katherine Pound

Husky Compact Dimension: Seek and Apply Knowledge

Title: Anylsis of Sediment Core #3, Fire Station Stormwater pond, City of Blaine

Abstract:
A sediment core from a storm-water pond, managed by the city of Blaine was collected and analyzed. The sediment type and thickness will be used to determine when the pond should be dredged. Also whether the pond will need to be placed in a hazardous waste dump.

Abstract Code: P154

Presentation Type: Poster Presentation

Presenter(s): Andrew Ortloff, Carlos Rojas, Michael Then, Ashley Triplett

Faculty Mentor(s): A. Serdar Sezen

Husky Compact Dimension: Integrate Existing and Evolving Technologies

Title: Robotic Deburring Knife Sorting

Abstract:
The project sponsor, rms Company, has approached Saint Cloud State University with the need for an automated method of removing carbide deburring knives from sharps containers. rms would like to begin reusing carbide deburring knives instead of disposing of them. The knives are placed in a sharps container by workers after they are no longer fit for use. These knives are small and extremely sharp, making manual sorting dangerous and impractical. rms needs a way to get used knives from sharps containers sorted back into a pallet so that they can be re-sharpened. The scope of this project includes identifying and sorting different sized deburring knives and safely disposing of the remaining items from the sharps container. This project will be accomplished through the implementation of a robot, vibratory table, and vision system. The outcome of this project will result in an automated sorting cell. Sharps containers will simply be dumped into a hopper system on one end of the cell, and full pallets of used knives will be reclaimed at the other. Carbide knives will be sorted from the remaining contents of sharps containers placed into pallets by the robot. The robot will dispose of the remaining sharps contents in a safe manner. Safety is the foremost concern; sharp objects need to be kept away from operators and contained in the cell.

Abstract Code: P155

Presentation Type: Poster Presentation

Presenter(s): Noah Prodzinski, Jacob Cihlar, Noah Martens

Faculty Mentor(s): Nancy Sundheim

Husky Compact Dimension: Seek and Apply Knowledge

Title: Louis Industries Kitting Process Improvement

Abstract:
Louis industries, a job shop manufacturing plant in Paynesville MN, is the business our capstone project was assigned. Louis industries is known for their expert knowledge in metal processing. Their main processes include laser cutting, bending, forming, welding, and other. Our team was tasked with improving their kitting process, which is the combining of parts for a complete assembly onto a metal frame before being brought to a separate building for the proceeding operation, welding. If a kit is brought over to the welding building incomplete, this can cause a disruption in the process, where a welder must look for the missing part to complete the kit. Excessive waste in motion and downtime is the result, and occasionally an incorrect part will be assembled. Our group initially learned about the kitting process and determined all elements that coincide with a complete kit. By observing the various processes and value-added operations performed prior to kitting, this allowed our group to get a better understanding of the major issues effecting a kit. To find the root cause(s) as to why a kit would be incomplete prior to welding, we performed a brainstorming workshop called EPIC. Epic means Error Prevention Innovative Capabilities. This includes root cause analysis and developing solutions solely based on the root cause. Solutions were graded based on a scale of technical vs behavioral, favoring the technical solutions. The solutions we developed were analyzed to determine which is the most impactful. Then we implemented the solution(s) to be evaluated and compared to our baseline measurement of incomplete kits. In the end, our goal is to improve Louis's on time delivery, by speeding up the rate at which product flows through the shop and in turn generate more profit for Louis.

Abstract Code: P156

Presentation Type: Poster Presentation

Presenter(s): Karrina DePas, Amanda Wolf, Victor Higdon, Josh Gerick

Faculty Mentor(s): Felicia Leammukda

Husky Compact Dimension: Act with Personal Integrity and Civic Responsibility

Title: Checking in and Checking Out

Abstract:
For this project, we will be using students during our field experience to examine how their moods change during a class period, throughout the week. In the first week, we will gather five students and ask them two emotions they feel at the beginning of class and two emotions they feel at the end of class. During the second week, the same five students will enter and we will ask two emotions they feel and at some point during the class, we will pass out a snack with an uplifting/inspirational note. At the end of class, we will ask two emotions they feel again. On the third week, the same five students will be asked again two emotions they feel and during the class, we will pass out water or a healthy beverage of some kind. And, again, at the end of class, we will ask two emotions they feel. The point of this research is to see how students emotions change with being asked and being offered a snack. Evaluating the mental health of students is extremely important and we want to see if the little things change how they feel.

Abstract Code: P161

Presentation Type: Poster Presentation

Presenter(s): Yuliya Gemechu

Faculty Mentor(s): H. Giovanni Antunez

Husky Compact Dimension: Communicate Effectively

Title: mental health and society

Abstract:
Mental health problem is one of the major problems the world faces. A lot of researches have been done on mental illnesses and there is still always new findings and new disorders coming up every time. Even though mental health conversations are becoming more common, there are some people who are still not okay with opening up about theirs or their family member's mental health issues in our community. especially when it comes to members of the community from different parts of the world (immigrants). I will be preparing a poster presentation about the current mental health issues in Saint Cloud and what the institution I am interning at is doing to help the society with mental illness problems. I will be showing all the 14 domains that recover health resources focus on while helping their clients and their family members. I will also include the things that I believe could be helpful in regards to combating mental illness in our society. I will include a map of the major types of mental health issues in Minnesota focusing on Saint Cloud and the frequency of those illnesses. I will summarize the problems and make my own recommendations and also what the institution I am interning for recommends in those kinds of situations.

Abstract Code: P164

Presentation Type: Poster Presentation

Presenter(s): Noor Aljabari

Faculty Mentor(s): Mili Mathew

Husky Compact Dimension: Seek and Apply Knowledge

Title: The influences of Language and Culture on Hand Gestures: Evidence from Monolinguals and Bilinguals

Abstract:
Hand gestures and speech are linked and they act like an integrated system; i.e. gestures are linked to the structure, meaning, and timing of language (McNeill, 1992). Few studies have provided support for cross-linguistic variations in the use of gestures and gesture-speech combinations in bilinguals (Kita & Ozyurek, 2003). However, aspects of this variation have not been fully studied in the context of bilingualism, particularly in the United States. For example, the influence of the manner in which the second language is acquired has never been considered in previous studies. Therefore, this study focused on understanding the influence of the language and culture on the production of hand gestures by comparing proficient bilingual Arabic-English speakers, who either acquired both languages at the same time (coordinated acquisition) or at different times (late acquisition) with monolingual English speakers. All participants were engaged in two discourse tasks, a story re-telling and conversation task. The study aimed to document the frequency and use of the different types of gestures, across three groups of participants and understanding the nature of coordination between gestures and speech. The preliminary results suggest that all three groups of participants used beat gestures frequently, irrespective of the type of task. It was observed that there were variations across the groups of participants; i.e. during conversation monolinguals used more gestures whereas, during story narration, late bilinguals were found to frequently use gestures. Additionally, during conversation, monolinguals were found to speak fewer utterances while producing more gestures, whereas, during story re-telling, late bilinguals spoke more and gestured frequently. Overall, the current findings suggest that there are differences in the use of gestures across the three groups of participants. The implications and limitations of this study will be discussed.

Abstract Code: P165

Presentation Type: Poster Presentation

Presenter(s): Lucia Laituri, Katelyn Koshiol

Faculty Mentor(s): Mili Mathew

Husky Compact Dimension: Seek and Apply Knowledge

Title: The relationship between Gestures and Speech in Monolingual English and Bilingual Indian-English Speakers

Abstract:
Hand gestures and speech are considered an integrated system, as gestures are linked to the structure, meaning, and timing of spoken language (McNeill, 1992). This would then imply that the use of gestures and perhaps even the role of gestures can vary across languages. This is because spoken languages, across diverse cultures, have different lexical and grammatical resources or rules to express the same thought. Several studies have provided support for cross-linguistic variations in gesture-speech combinations (Kita & Ozyurek, 2003), gesture rate (Goldin-Meadow et al., 2000), and gesture space (Levinson, 2003). In a similar vein, studies on bilinguals have demonstrated differences in the role of gestures when the task required them to narrate events in both known languages. The aim of this study will be to investigate the following between the two groups of speakers: a) The frequency and use of different types of gestures, namely, iconic, deictic, metaphoric and beats; b) The use of each gesture type in relation to the discourse structure of spoken output. This study will include 15 monolingual and 15 bilingual participants. Speaking samples will be elicited using discourse tasks such as picture-description, story re-telling, and procedural description. The participants will be video and audio recorded in a quiet room. Spoken language will be transcribed using the Conceptual Information and Correct Information Unit analyses (Nicholas & Brookshire, 1993) and gestures will be coded into types and phases using ELAN software (Lausberg & Sloetjes, 2009). The results of the study will be analyzed in order to understand the relationship between gestures and speech in the context of linguistic variability.

Abstract Code: P166

Presentation Type: Poster Presentation

Presenter(s): Trevor Waltzing

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: Obstacles for Students Studying Abroad

Abstract:
The purpose of this research is to identify the perceived obstacles of students studying abroad. This will be achieved through defining study abroad and statistics, reporting on the history of study abroad programs, understanding and identifying the benefits of studying abroad and identifying the perceived obstacles of studying abroad.

Abstract Code: P167

Presentation Type: Poster Presentation

Presenter(s): Gloria Vang, Emily Baugh

Faculty Mentor(s): Randal Baker, Hung-Chih Yu

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Major Perceived Benefits of Studying Abroad

Abstract:
Our topic is the major perceived benefits of participating in a study abroad program. Our research question is what did St. Cloud State University students think the benefits of study abroad were? We have decided to do this topic because we are interested in learning about the benefits that students receive from studying abroad. We are two students who have different perspectives of studying abroad because one of us has gone before while the other one has not. Gloria feels as though it will be interesting to partake in this topic to give her perspective with other students who have also gone. While Emily feels as though studying abroad is something that she would like to partake in something herself one day, but has not had the chance to do. Also that learning about it is a good way to help make the decision. As well as helping other people learn about the benefits that can be gained, can help them decide if they want to study abroad during their school venture. We plan to execute our research by communicating/doing an evaluation with St. Cloud State University students who have gone study abroad before, and are older than 18 years old.

Abstract Code: P168

Presentation Type: Poster Presentation

Presenter(s): Nuna Vang, Ujjwa Khadka

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: Attitude of Local Residents Towards Tourism Development in Nepal

Abstract:
The country of Nepal has great potential to become one of the top tourist destinations as the nation is renowned for its snow-capped mountains, plentiful flora and fauna, thrilling trekking routes, and rich cultural and religious diversities. The aim of this research is to assess and seek residents ' resulting attitudes towards the growth of tourism in Nepal. It goes on to seeking identifying factors that affect the prevailing local attitudes and how those perceptions influence their support and/or opposition to the development of tourism. An instructed qualitative research technique is used to define Nepal residents ' expectations of the effects of the development of tourism. A tape-recording interview is selected as per preparation in order to ensure a consistent method and in consideration of continuing with questions without limiting the language barriers for the reply and hence reflecting the answers from the interviewees. The questions relate to how local people view tourism in Nepal and what they think about tourism growth in their area. The random sampling technique is used to select 10 interviewees towards a certain local area, involving a face-to-face and online communication that lasted for approximately 20 minutes. With the interviewees ' permission, each transcribed paper is inserted into categorized tree-maps: the perceived effects of the economic, socio-cultural and environmental impact are positive and negative attitudes. Overall, the research aims to define the expectations of Nepalese residents about the effects of tourism growth, as a result of their attitudes and perceptions.

Abstract Code: P169

Presentation Type: Poster Presentation

Presenter(s): Megumi Sakiyama, Natsuki Komiyama

Faculty Mentor(s): Randal Baker, Hung-Chih Yu

Husky Compact Dimension: Seek and Apply Knowledge

Title: The Major Benefits of Study Abroad

Abstract:
Our research topic is; “the major benefits of study abroad”. We focus on Japanese exchange students who have been at St. Cloud State University (SCSU) for at least a half year and who are also currently studying at SCSU. The reason we focused on exchange students is that there are several differences in their attitude toward learning compared to the other international students who attend SCSU for four years, whereas exchange students have limited time which is approximately one year. Thus, the limitation in time spent makes the students put extra effort into earning enough credits to get them back to their universities. In addition, recently there has been an increase in the demand of Japanese universities requiring students to go abroad, so by conducting this research, we would know what the outcomes will be on students through study abroad.The interview will be conducted with 10 students, five of them are from three different universities in Japan and have already completed their programs. The other five are from two different universities and are currently studying at SCSU. We expect that the experience of studying abroad would change our perspectives, improve English, and help to gain new abilities such as better communication skills. The purpose of this study is to understand the meanings and advantages of studying abroad objectively so that we appreciate the environment that we are in.

Abstract Code: P170

Presentation Type: Poster Presentation

Presenter(s): Chao Her

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: Study Abroad of host culture based on influences and perception

Abstract:
My project will be about studying abroad based on influences and perception. I know that study abroad is a wide topic and it might gets confusing if I did not a do good job on my research paper but in my research project I will limited and only talk about tourist perceptions and the influences that brought students to where they were. The perceptions of a tourists as they experience what the host country has to offer and what it really is like to be around another country. And what changes the students perceptions after the stayed in that host country. Most importantly, it is to experience the different cultural about the host country and see what it is all about. Culture is a big topic as to why people travel to another part of the world just to experience it. Studying abroad is the same as traveling comes with school as priority. Another main topic that I will talk about is the influences to why the students picked to go where they are. Talking about influences there might be more than one but the influences are the most important factor. And finally the changes in what their influences brought to that host country, like the difference of their own imagination and reality. In this project I will be doing interviews with international students and ask questions regarding these main topics. This will cover everything of what my project is really about.

Abstract Code: P171

Presentation Type: Poster Presentation

Presenter(s): Cooper Harron

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: How travel review sites have effected travel choices/behavior.

Abstract:
I will be researching the effects that travel sites (Such as Yelp, TripAdvisor, and Expedia) have on tourist behaviors/choices. I will be interviewing individuals 50 and older and see what influenced their travel, and how they found out about places to vacation too. word of mouth? friends and family? what was their biggest influence. i will also be interviewing people of college age (18-24) to see how they decide on places to visit. How much do review sites effect their travel choices. does 1 bad online review effect where you go? and vice versa, does a few good reviews sway their decisions one way or another. Do millennial's even use these sites to help dictate where they go on trips or vacations.

Abstract Code: P172

Presentation Type: Poster Presentation

Presenter(s): Ony Adeneke

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Mapping 'Witch-phobia': Analyzing the Diffusion of Witch Trials in Europe and America

Abstract:
The witch trials occurred during the Early Modern era (1500s - 1700s) in Europe and later the US colonies. Those who were deemed culturally "deviant" were often the victims of an unethical court system built on religious law. It is argued that his series of events occurred as part of the shifting cultures at the time, including but not limited to: the spread of Christian doctrine, the increasing visibility of women, and socio-political turmoil. To analyze this part of history is to map the spread of ideas across a landscape while taking into account what factors led to this diffusion of culture. Using methods in archival research and geographic information science, I plan to map the diffusion of the witch trials in order to address this question: what cultural factors lead to the spread of witch-phobia and subsequent witch trials? With my data I hope to determine the factors leading to the onset, spread, and decline of the witch trials.

Abstract Code: P173

Presentation Type: Poster Presentation

Presenter(s): Katelyn Mueller

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Towards a Geography of Minnesota's Trash

Abstract:
Where your trash ends up depends on where you live in Minnesota, and it depends on cost and transportation. There are 21 landfills and seven waste energy plants in Minnesota. Recycling has become a Minnesota standard, with a focus on it everywhere: in our homes, schools, stores and even public spaces. According to the St. Cloud Times, Stearns County ranks 6th (43%) in the state for recycling. Scott County was ranked the highest at a 58% recycling rate. With such an emphasis on recycling, it seems as though landfills are forgotten about. The majority of our waste still ends up in a landfill or is incinerated. From single use plastics, to excessive packaging, overconsumption is an issue on many levels. There are a variety of ways one can reduce their footprint, and we must abandon the out of sight out of mind way of thinking when it comes to tossing our waste. It is clear that there is far more to waste management than just reduce, reuse, recycle. As individuals we can all find ways to improve, but also we can also encourage and push for our lawmakers to be more progressive when it comes to waste.

Abstract Code: P174

Presentation Type: Poster Presentation

Presenter(s): Meagan Voss

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Ice is Nice: The Economic Impact of Post-Glacial Landscapes in Minnesota

Abstract:
This is a project that shows how our present day economy has been impacted by post-glacial ice from millennium ago. Post-glacial landscapes, those which include features like drumlins, eskers, kettle lakes and much more, are evident throughout the Midwestern region as well as the rest of the northernmost parts of the United States. In particular, Minnesota experienced major topological changes as a result of the Wisconsin glacial epoch, our last major ice age, which ended approximately 10,000 years ago in which massive sheets of ice moved and later receded across much of the state, altering the land and ultimately, its use. These changes undoubtedly benefited early agricultural settlers in the southern part state as the glacial epoch left behind well-sorted fertile soils and flattened stretches of land to grow food. Is it possible that the post-glacial effects from centuries ago now affect the current economy of Minnesota? Drawing on various completed journal articles and case studies about post-glacial landscapes, analysis of economic data, and the use of GIS, this project sets out to consider the extent to which post-glacial landscapes of the past have impacted current economic development and prosperity in Minnesota.

Abstract Code: P175

Presentation Type: Poster Presentation

Presenter(s): Alex Zemla

Faculty Mentor(s): Gareth John

Husky Compact Dimension: Seek and Apply Knowledge

Title: Geopolitics of Interwar Poland

Abstract:
World War 1 devastated much of Europe, with cities and countryside turned to rubble and ash. Out of the ashes like a phoenix, one country re-emerged after a hundred years of being erased from the map: that country was Poland. The nation of Poland re-emerged after World War 1 and, as a result of substantial political operations from within the nation, evolved dramatically before World War 2. Drawing on work in historical geography, this project will apply online archival data and research from journals to analyze the political changes in interwar Poland (1918-1939). Historical geography is vital to research Poland's re-emergence, as one element that permeates through the state's development was nationalism. This research will show the various ways that the nation of Poland re-emerged and developed as a country in the interwar period in large part due to the nationalist political contributions to the newly independent state.Keywords: Poland, historical geography, nationalism, interwar period

Abstract Code: P177

Presentation Type: Poster Presentation

Presenter(s): Alex Rydberg, Amanda Swanson

Faculty Mentor(s): Hung-Chih Yu

Husky Compact Dimension: Seek and Apply Knowledge

Title: Reactions to Stop Signs in Minnesota

Abstract:
This presentation is a description of how drivers in the state of Minnesota respond when approaching stop signs. We have looked at driver age, driver gender, car color, car type, weather, whether other cars were approaching the stop sign at roughly the same time, and two separate locations and compared these statistics to how said drivers responded at stop signs. Did they come to a full stop? Or did they just slow down considerably to a crawl before going through? Or did they even simply ignore the stop sign? We found that it didn't matter on what kind of car the driver rode in or it's color, nor did it seem to matter whether the driver was male or female. It was also abundantly clear that if there was at least one more vehicle coming to the stop sign that everyone, save one or two, came to a complete stop, so that was more or less removed from the final project. But the remaining three factors (driver age, weather, and location) gave us some data that determined how people behaved when approaching a stop sign. Our observations have shown that the younger a driver is, the less likely they are to stop completely. We also found that when the weather was overcast, as opposed to sunny, people were more likely to stop. And of the two locations, the one on a university campus yielded more speed throughs than the one in a family-setting north-metro suburb.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: P178

Presentation Type: Poster Presentation

Presenter(s): Bilguundorj Nurzedmaa

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Engage as a Member of a Diverse and Multicultural World

Title: development of Hospitality and tourism

Abstract:
My presentation will introduce about hospitality and tourism's. What is exactly H&T and the historically background information, also how we deal with that advantage and disadvantages.Tourism industry has worldwide opportunities for every travelers and applicants. Hospitality and tourism has massive positive sides but there is also negative impacts to our planet, for examples: climate changes, human traffic or any case of virus illnesses.At the end, how we bring "Hospitality and tourism" to next level.

2020 HUSKIES SHOWCASE ABSTRACTS – APRIL 2020

Abstract Code: P179

Presentation Type: Poster Presentation

Presenter(s): Leah LaValle

Faculty Mentor(s): Randal Baker

Husky Compact Dimension: Seek and Apply Knowledge

Title: Benefits and Barriers of Working in the Nautical Tourism Industry

Abstract:
Research will be completed on the nautical tourism industry, in hopes to get a better insight of worker benefits and barriers. Working experiences from Caribbean and Mediterranean destinations will be the primary focus of this study. Since there are several forms of nautical tourism, only sailing, yachting, and cruising will be researched in this study. Overall, a worker's job satisfaction will be focused on to analyze if work is enjoyed and which benefits influence them to recommend the industry. Also, various barriers within the industry will be analyzed and prepare future workers. Additional research will include: training requirements, pay wages, skills and abilities, and constraints. Depending on the form of oversea employment (sailing, yachting, or cruising), there will be significant requirement differences, so all three

will be noted. Throughout the entire study, articles will be used to compare perceived benefits and which aspects among workers are the most highly rated. Finally, the most significant barriers will show employers and future works which factors could be most improved to lead to higher worker satisfaction.